

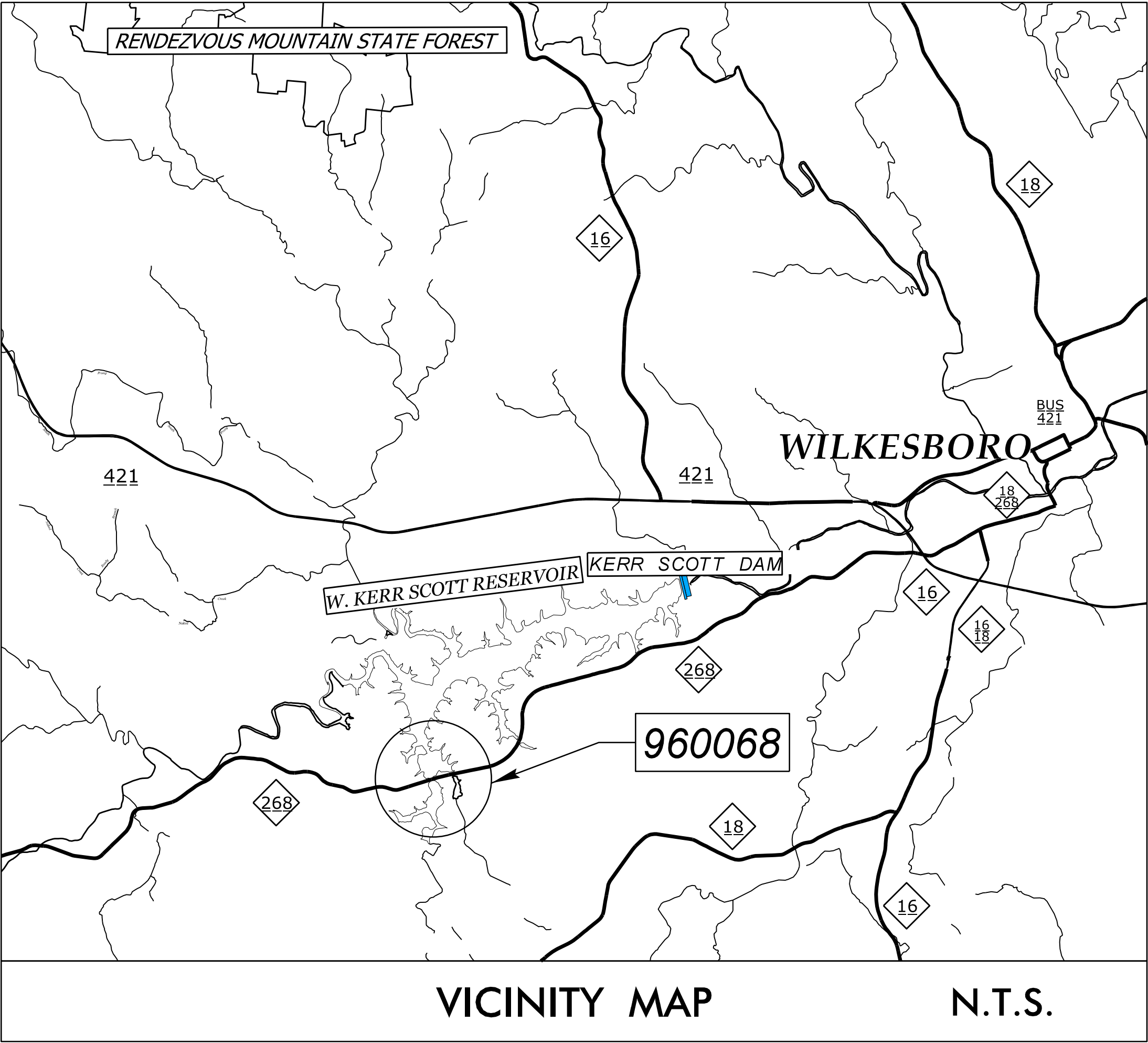
CONTRACT: C205010 PROJECT NUMBER: 15BPR.149.3

STRUCTURES

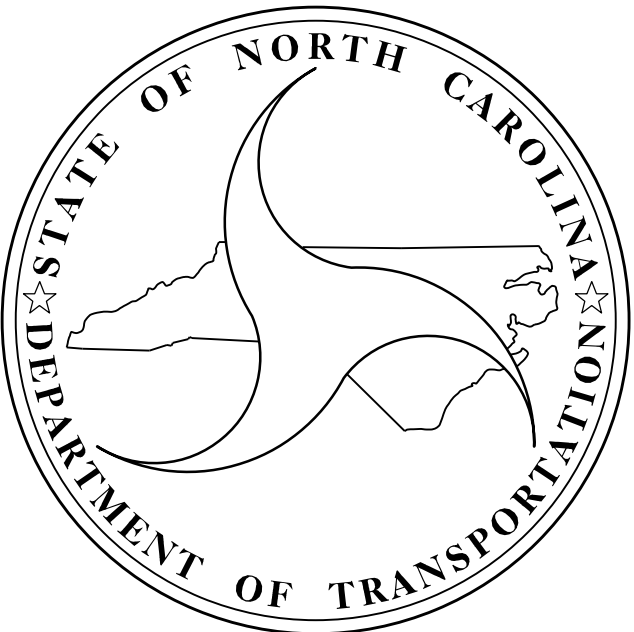
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WILKES COUNTY

LOCATION: BRIDGE #960068 ON NC HWY 268 OVER WARRIOR CREEK
TYPE OF WORK: APPROACH ROADWAY MILLING AND RESURFACING, CONCRETE DECK REPAIRS, HIGH MOLECULAR WEIGHT METHACRYLATE (HMWM) SEALER, JOINT REPLACEMENT, SUBSTRUCTURE CONCRETE REPAIRS, CLEANING AND PAINTING EXISTING STEEL, CLEANING AND PAINTING BEARINGS WITH HRCSA, BEARING REPLACEMENT, BEAM REPAIR CUT-OUT, BRIDGE JACKING, EPOXY COAT CAPS.



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.149.3	1	22
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
15BPR.149.1	-	P.E.	
15BPR.149.3	-	CONST.	



DESIGN DATA

BRIDGE # 960068 ADT 2021 = 3,100

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT 15BPR.149.3 = 0.019MI.
LENGTH OF STRUCTURE PROJECT 15BPR.149.3 = 0.084 MI.
TOTAL LENGTH OF PROJECT 15BPR.149.3 = 0.103 MI.

LOCATION SKETCHES

INFORMATION INDICATED ON THE LOCATION SKETCHES SHALL BE CONSIDERED GENERAL INFORMATION ONLY. THE CONTRACTOR SHALL CONFIRM, THROUGH OTHER SOURCES, SPECIFIC INFORMATION REGARDING BRIDGES, ROADWAYS UTILITIES, THE SURROUNDING AREA, AND ANY OTHER ASPECTS THAT MAY BE NECESSARY TO PERFORM AND COMPLETE THE WORK.

Prepared for the Office of:
DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

2024 STANDARD SPECIFICATIONS

LETTING DATE :

DECEMBER 16, 2025

JACOB H. DUKE, PE, CBI
PROJECT ENGINEER

FIDEL L. FLORES, E.I., CBI
PROJECT DESIGN ENGINEER

INDEX OF SHEETS

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S-15	BEARING REPLACEMENT DETAILS (1 OF 3)
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S-20	SUBSTRUCTURE REPAIRS (3 OF 3)
S-21	CONCRETE RESTORATION DETAILS (1 OF 2)
S-22	CONCRETE RESTORATION DETAILS (2 OF 2)
SN	STANDARD NOTES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.149.3	1A	22
STATE PROJ.NO.	F.A.PROJ.NO.	DESCRIPTION	
15BPR.149.1	–	P.E.	
15BPR.149.3	–	CONST.	



LOCATION MAP

960068

NOTES:

AT THE TIME OF PREPARATION OF THESE PLANS, IT WAS NOT ANTICIPATED THAT THE ITEM(S) LISTED BELOW WOULD BE REQUIRED. HOWEVER, IT MAY BE DETERMINED IN THE FIELD THAT THE FOLLOWING ITEM(S) LISTED, OR OTHER WORK, WILL BE NECESSARY TO PROPERLY COMPLETE THE INTENDED BRIDGE PRESERVATION/REHABILITATION WORK. THE CONTRACTOR SHALL BE PREPARED TO PERFORM SUCH WORK IN A TIMELY MANNER, AS DETERMINED IN THE FIELD. SUCH WORK SHALL BE CONSIDERED EXTRA WORK AND SHALL BE ADDRESSED AS PER ARTICLE 104-7 OF THE STANDARD SPECIFICATIONS. PROJECT SPECIAL PROVISIONS THAT OUTLINE REQUIREMENTS FOR THESE POTENTIAL ADDITIONAL WORK ITEMS HAVE BEEN PROVIDED IN THE PROJECT DOCUMENTS, BUT NO QUANTITIES HAVE BEEN LISTED. ACTUAL PAY ITEMS, QUANTITIES, AND COSTS WILL BE ESTABLISHED, AS REQUIRED, IF EXTRA WORK IS ENCOUNTERED. UNANTICIPATED ITEMS:

ITEM	DESCRIPTION	UNIT
1	CLASS III, SURFACE PREPARATION	SQ. YDS.
2	EPOXY RESIN INJECTION	LIN. FT.
3	TYPE II BRIDGE JACKING	EA

BRIDGE COORDINATES

BRIDGE No.	LATITUDE	LONGITUDE
960068	36° 5' 56.6"	81° 16' 50.72"

TOTAL BILL OF MATERIAL

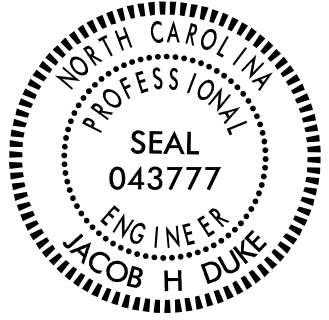
DESCRIPTION	INCIDENTAL MILLING	ASPHALT CONCRETE SURFACE COURSE, TYPE 9.5C	ASPHALT BINDER FOR PLANT MIX	POLLUTION CONTROL	FOAM JOINT SEALS FOR PRESERVATION	CLASS II, SURFACE PREPARATION	CONCRETE REPAIRS	SHOTCRETE REPAIRS	CLEANING AND REPAINTING OF BRIDGE NO. 960068	PAINTING CONTAINMENT FOR BRIDGE NO. 960068	VOLUMETRIC MIXER	MOLDED RUBBER SEGMENTAL EXPANSION JOINT
BRIDGE NO:	SQ. YD.	TON	TON	LUMP SUM	LIN. FT.	SQ. YD.	CU. FT.	CU. FT.	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM
960068	245	25	1.5	LUMP SUM	29.0	8.6	31.5	82.6	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM
TOTALS:	245	25	1.5	LUMP SUM	29.0	8.6	31.5	82.6	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM

TOTAL BILL OF MATERIAL CONT.

DESCRIPTION	ELASTOMERIC CONCRETE FOR PRESERVATION	BEAM REPAIR CUT-OUT	BRIDGE JOINT DEMOLITION	EPOXY COATING	CONCRETE WORK FOR JOINT REPLACEMENT	SHOT-BLASTING BRIDGE DECK	CONCRETE BRIDGE DECK CRACK SEALING	CONCRETE DECK REPAIR FOR CONCRETE BRIDGE DECK CRACK	CLEANING AND PAINTING EXISTING BEARINGS	TYPE I BRIDGE JACKING FOR BRIDGE NO. 960068	ELASTOMERIC BEARING	STUB COLUMN
BRIDGE NO:	CU. FT.	LB.	SQ. FT.	SQ. FT.	SQ. FT.	SQ. YD.	SQ. YD.	SQ. YD.	EA	EA	EA	EA
960068	4.1	2818	16.4	576	72	1374	1374	1372	12	14	12	12
TOTALS:	4.1	2818	16.4	576	72	1374	1374	1372	12	14	12	12

PROJECT NO. 15BPR.149.3
WILKES COUNTY
BRIDGE NO. 960068

Signed by:
Jacob Duke
20530C0654E94D9.
10/8/2025



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LOCATION SKETCH & TOTAL BILL OF MATERIAL

DRAWN BY : ALLEN J. MCSWAIN DATE : 10/2024
CHECKED BY : FIDEL L. FLORES DATE : 10/2024
DESIGN ENGINEER: JACOB H. DUKE DATE : 10/2024

10/8/2025
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DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			22

GENERAL NOTES

ASSUMED LIVE LOAD FOR REPAIRS = HL93

GENERAL DRAWING(S) INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE MOST RECENT ROUTINE INSPECTION REPORTS.

ALL BRIDGE ORIENTATIONS CONFORM TO THE EXISTING BRIDGE PLANS/ROUTINE INSPECTION REPORT.

PRIOR TO BEGINNING WORK, THE CONTRACTOR SHALL SUBMIT, FOR REVIEW AND APPROVAL, A COMPLETE SEQUENCE OF TASKS FOR EACH OPERATION AFFECTING THE BRIDGE(S) SURFACE AND/OR TRAFFIC.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT DUE TO THE NATURE OF PRESERVATION PROJECTS, THE EXTENT OF THE WORK CANNOT ALWAYS BE ACCURATELY DETERMINED PRIOR TO COMMENCEMENT OF WORK. REPAIR LOCATIONS AND ESTIMATES OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS, NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS.

THE EXISTING DIMENSIONS, ELEVATIONS, AND CONDITION OF THE BRIDGES ARE FROM THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL FIELD VERIFY THE INFORMATION SHOWN IN THE PLANS AND NOTIFY THE ENGINEER IF ACTUAL DIMENSIONS AND CONDITIONS DIFFER.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW ALL STATE, FEDERAL AND LOCAL REQUIREMENTS.

THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON THE DIFFERENCES BETWEEN WHAT IS SHOWN IN THE PLANS AND THE ACTUAL CONDITIONS AT EACH PROJECT SITE.

WORK ON THE BRIDGES SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL BELOW, EXCEPT WHERE THE CONTRACTOR'S PLANS USE PLATFORMS, NETS, SCREENS OR OTHER PROTECTIVE DEVICES TO CATCH THE MATERIAL. THE CONTRACTOR SHALL SUBMIT PLANS FOR CONSTRUCTION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS AND THE PROJECT SPECIAL PROVISIONS.

THE CONTRACTOR SHALL PERFORM ALL WORK WITH CARE SO THAT THE EXISTING STRUCTURES WHICH ARE TO REMAIN IN PLACE WILL NOT BE DAMAGED. IF THE CONTRACTOR DAMAGES ANY PART OF THE EXISTING STRUCTURE, WHICH IS TO REMAIN IN PLACE, THE DAMAGED AREA SHALL BE REPAIRED AND REPLACED IN A MANNER SATISFACTORY TO THE ENGINEER AT NO ADDITIONAL COST TO THE DEPARTMENT.

ANY DAMAGE TO EXISTING REINFORCING STEEL DURING CONTRACTOR'S OPERATIONS SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AND PERFORMED AT NO ADDITIONAL COST TO THE DEPARTMENT.

FOR CONTROL OF TRAFFIC AND LIMITS ON PHASING OF CONSTRUCTION, SEE ELSEWHERE IN CONTRACT DOCUMENTS.

EXISTING JOINTS AND DECK DRAINS SHALL BE SEALED PRIOR TO BEGINNING SURFACE PREPARATIONS OF THE BRIDGE. THE CONTRACTOR SHALL TAKE CARE THAT ANY CONSTRUCTION DEBRIS THAT COLLECTS IN THE DRAINS IS CONTAINED AND REMOVED. DRAINS IN SHOULDERS OF ADJACENT TRAVEL LANES SHALL BE KEPT FREE AND CLEAR OF DEBRIS.

FOR BRIDGE SCOPE OF WORK, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR SECURING OF VESSELS, SEE SPECIAL PROVISIONS.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH BAR USED. THE SAMPLE BARS SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICED BARS AS SPECIFIED IN THE SAMPLE BAR REPLACEMENT CHART. PAYMENT FOR SAMPLE BARS AND REPLACEMENT REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

ALL PAVEMENT MARKINGS WILL BE IN ACCORDANCE WITH THE PAVEMENT MARKING PLANS.

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50 AND PAINTED IN ACCORDANCE WITH SYSTEM 1 OR SYSTEM 2 OF THE STRUCTURAL STEEL COATINGS PROGRAM AND SECTION 442-8 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

ALL STRUCTURAL STEEL SHALL BE CLEANED AND PAINTED UP TO THE LIMITS SHOWN ON THE PLANS.

REPAIR LOCATIONS AND ESTIMATES OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS.

INASMUCH AS THE PAINT SYSTEMS ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDELING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICES FOR ITEMS ASSOCIATED WITH THE CLEANING AND REPAINTING OF BRIDGES.

THE CONTRACTOR SHALL SCHEDULE CLEANING AND PAINTING OPERATIONS SUCH THAT THE STEEL REPAIRS ARE PERFORMED AFTER THE STEEL HAS BEEN CLEANED AND PREPARED FOR PAINTING AND BEFORE PAINTING OPERATIONS. AFTER STEEL REPAIRS HAVE BEEN COMPLETED, THE REPAIRS SHALL BE BLAST-CLEANED ACCORDING TO THE STANDARD SPECIFICATIONS.

FOR PAINTING CONTAINMENT AND POLLUTION CONTROL, SEE SPECIAL PROVISIONS.

FOR SHOTBLASTING BRIDGE DECK AND CONCRETE BRIDGE DECK CRACK SEALING, SEE SPECIAL PROVISIONS.

FOR CLASS II AND CLASS III SURFACE PREPARATION, SEE SPECIAL PROVISIONS.

FOR VOLUMETRIC MIXER, SEE SPECIAL PROVISIONS.

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR MOLDED RUBBER SEGMENTAL EXPANSION JOINT, SEE SPECIAL PROVISIONS.

FOR CONCRETE WORK FOR JOINT REPLACEMENT, SEE SPECIAL PROVISIONS.

FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

FOR PAINTING EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

FOR CLEANING AND PAINTING EXISTING BEARINGS WITH HRCSA, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

FOR BEAM REPAIR CUT-OUT, SEE SPECIAL PROVISIONS.

FOR CONCRETE DECK REPAIR FOR CONCRETE BRIDGE DECK CRACK SEALING, SEE SPECIAL PROVISIONS.

FOR CONCRETE BRIDGE DECK CRACK SEALING, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

FOR STUB COLUMNS, SEE SPECIAL PROVISIONS.

SAMPLE BAR REPLACEMENT	
SIZE	LENGTH
#3	6'-2"
#4	7'-4"
#5	8'-6"
#6	9'-8"
#7	10'-10"
#8	12'-0"
#9	13'-2"
#10	14'-6"
#11	15'-10"

NOTE: SAMPLE BAR REPLACEMENT LENGTHS BASED ON 30" (SAMPLE LENGTH) PLUS TWO SPLICE LENGTHS AND Fy = 60ksi.

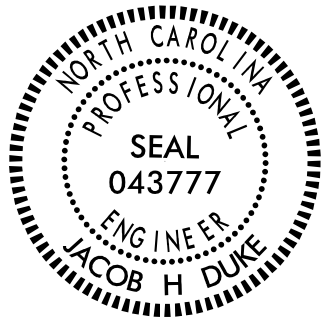
PROJECT NO. 15BPR.149.3

WILKES

COUNTY

BRIDGE NO. 960068

Signed by:
Jacob Duke
29530C954E94D9
10/8/2025



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
GENERAL NOTES					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					22

DRAWN BY :	ALLEN J. MCSWAIN	DATE :	10/2024
CHECKED BY :	FIDEL L. FLORES	DATE :	10/2024
DESIGN ENGINEER:	JACOB H. DUKE	DATE :	10/2024

10/8/2025
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301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

SCOPE OF WORK LEGEND:

- 1

DECK REPAIRS
- 2

REPLACE JOINTS
- 3

HIGH MOLECULAR WEIGHT
METHACRYLATE (HMWM) SEALER
- 4

CLEANING AND PAINTING EXISTING STEEL
- 5

BEAM END REPAIRS
- 6

CLEANING AND PAINTING BEARINGS WITH HRCSA
- 7

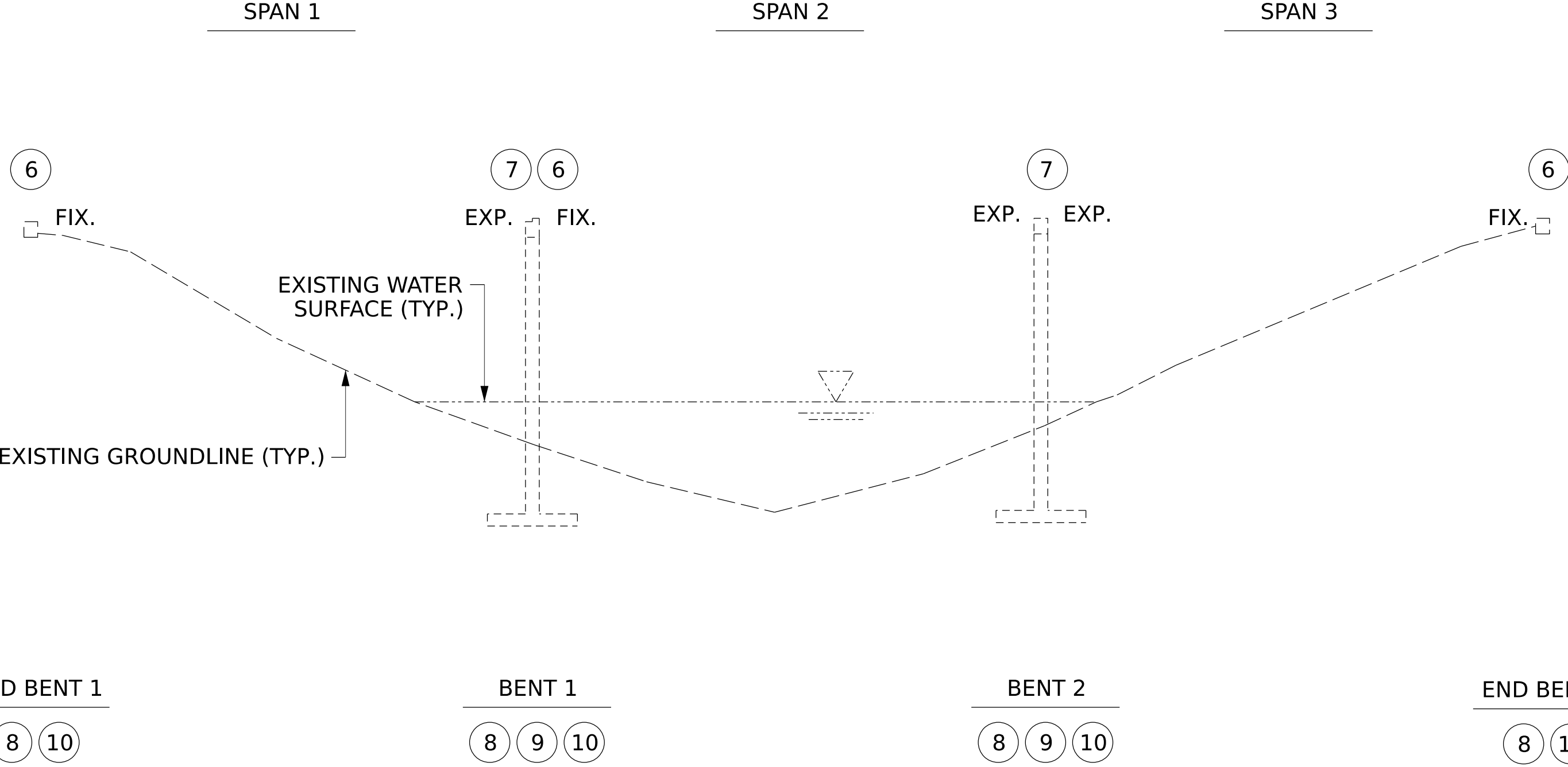
REPLACE BEARINGS
- 8

SUBSTRUCTURE CONCRETE REPAIRS
- 9

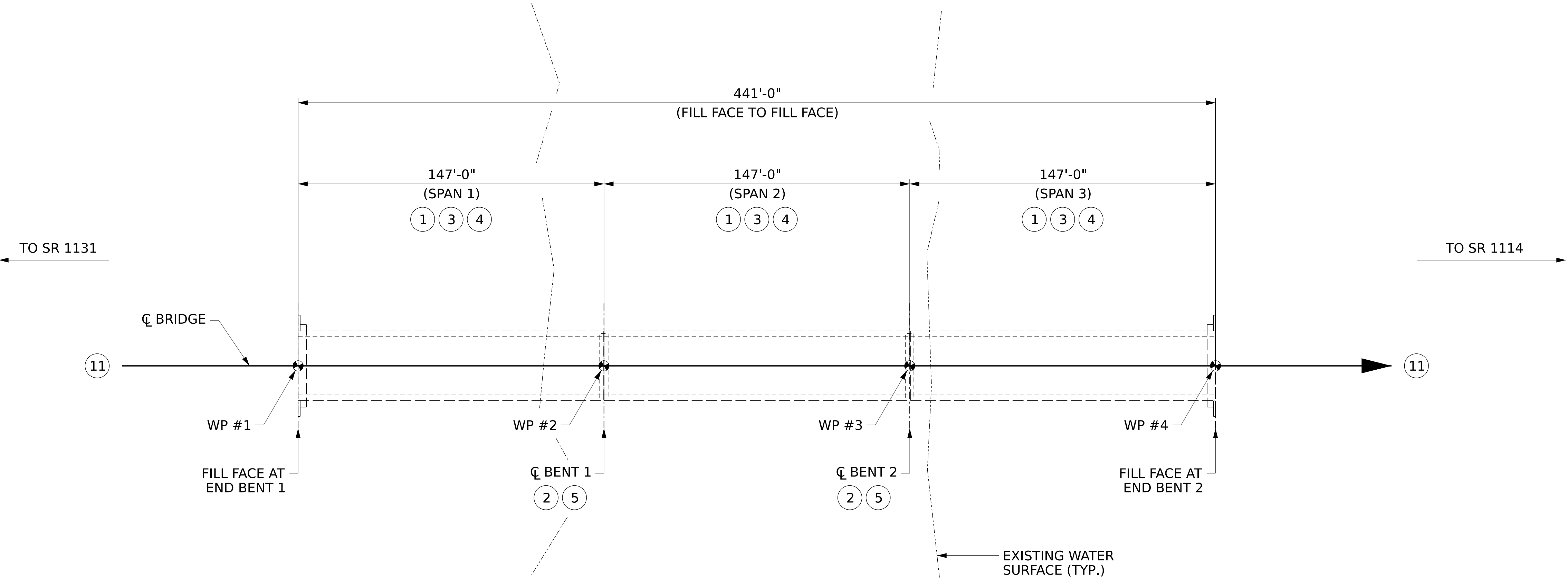
BRIDGE JACKING
- 10

EPOXY COAT CAPS
- 11

APPROACH ROADWAY MILLING AND RESURFACING



SECTION ALONG $\varnothing$ BRIDGE



PLAN VIEW

I HEREBY CERTIFY THAT THIS STRUCTURE
WAS REHABILITATED ACCORDING TO
THESE PLANS OR AS NOTED THEREIN.

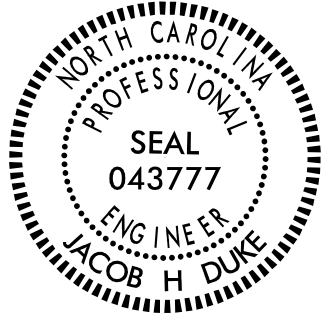
RESIDENT ENGINEER DATE

PROJECT NO. 15BPR.149.3

WILKES COUNTY

BRIDGE NO. 960068

Signed by:
Jacob Duke
2053100054E94D9.
10/8/2025



KCA
KISINGER CAMPO
& ASSOCIATES

GENERAL DRAWING
FOR BRIDGE ON NC HWY 268
OVER WARRIOR CREEK

DRAWN BY : ALLEN J. MCSWAIN DATE : 10/2024
CHECKED BY : FIDEL L. FLORES DATE : 10/2024
DESIGN ENGINEER: JACOB H. DUKE DATE : 10/2024

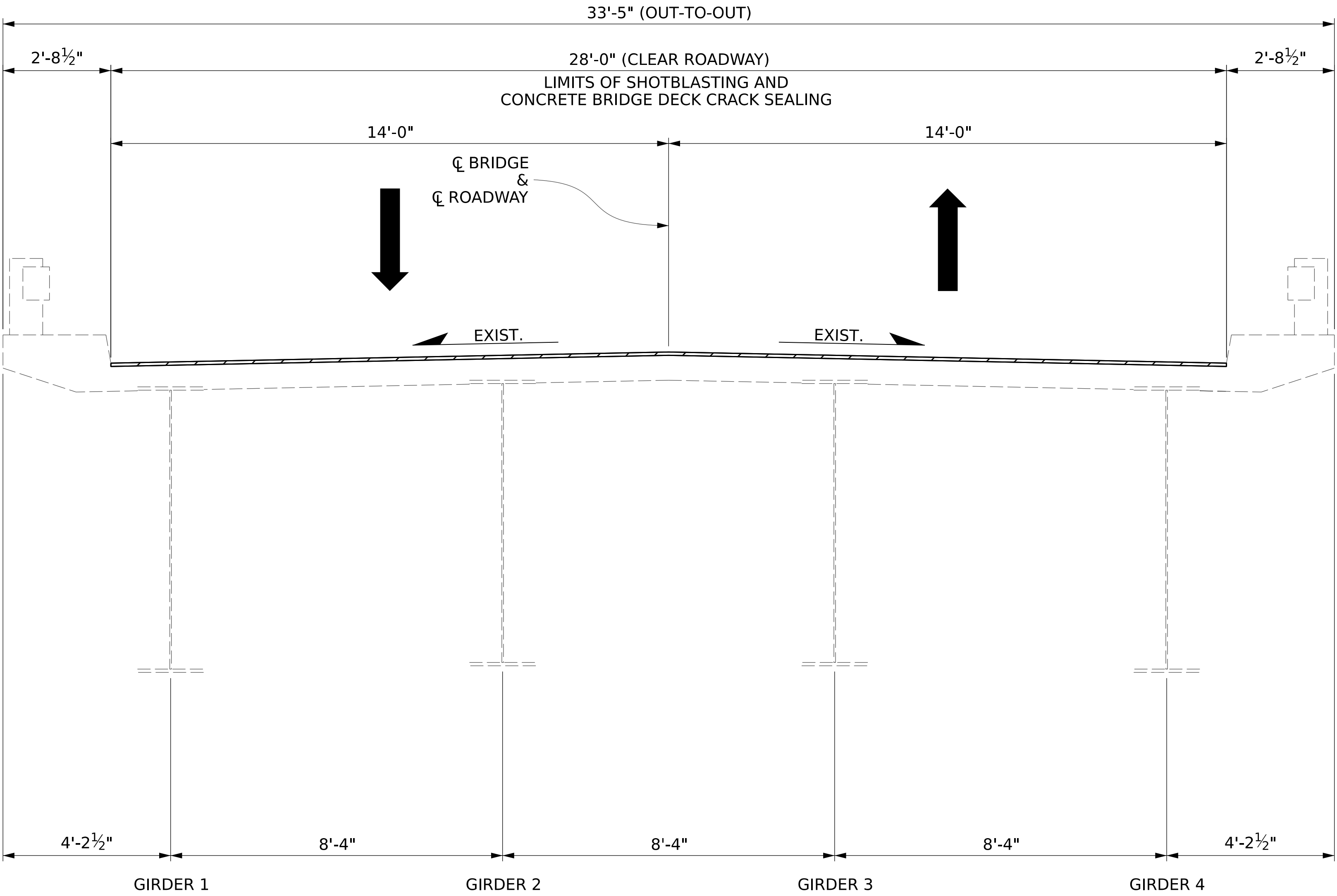
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1			3			22
2			4			

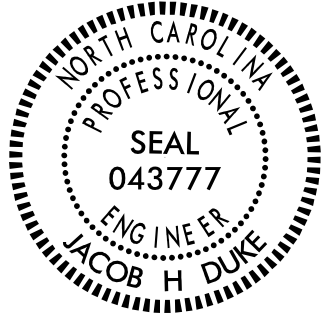
NOTES:
SEE CONTRACTOR DOCUMENTS FOR LANE WIDTHS, SEQUENCING AND OTHER TRAFFIC CONTROL MEASURES FOR STAGING OF BRIDGE DECK CRACK SEALING.
FOR CONCRETE BRIDGE DECK CRACK SEALING, SEE SPECIAL PROVISIONS.



PROPOSED TYPICAL SECTION

PROJECT NO. 15BPR.149.3
WILKES COUNTY
BRIDGE NO. 960068

Signed by:
Jacob Duke
29530C9054E94D9
10/8/2025



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION

DRAWN BY : ALLEN J. MCSWAIN DATE : 10/2024
CHECKED BY : FIDEL L. FLORES DATE : 10/2024
DESIGN ENGINEER: JACOB H. DUKE DATE : 10/2024

10/8/2025
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RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
S-5
TOTAL SHEETS
22

NOTES:

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE AS-BUILT REPAIR QUANTITY TABLE.

FOR CONCRETE BRIDGE DECK CRACK SEALING, SEE SPECIAL PROVISIONS.

FOR DECK SURFACE PREPARATION FOR DECK REPAIRS, SEE SPECIAL PROVISIONS.

FOR VOLUMETRIC MIXER, SEE SPECIAL PROVISIONS.

FOR SHOTBLASTING BRIDGE DECK AND CONCRETE BRIDGE DECK CRACK SEALING (HMWM), SEE SPECIAL PROVISION.

FOR CONCRETE WORK FOR JOINT REPLACEMENT, SEE SPECIAL PROVISION.

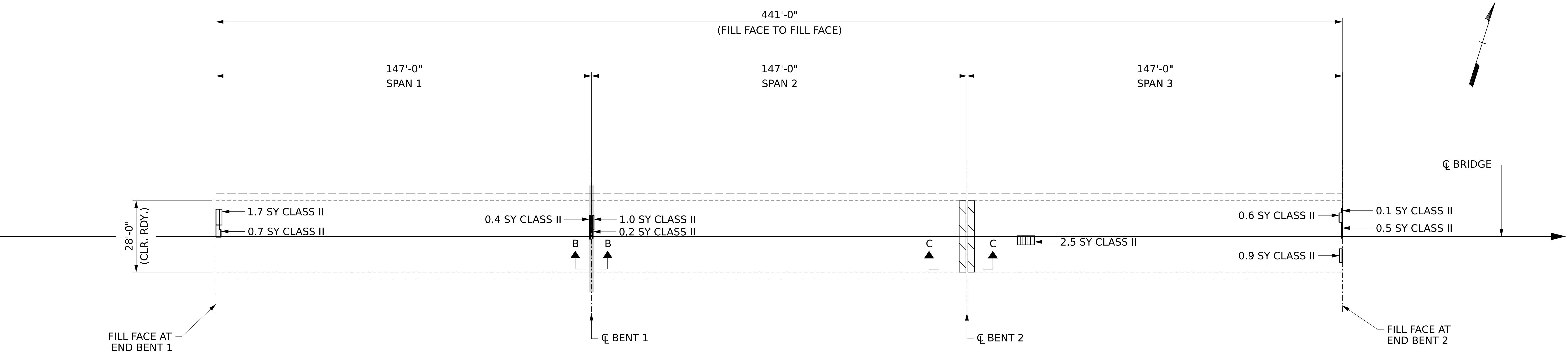
FOR CONCRETE DECK REPAIR FOR CONCRETE BRIDGE DECK CRACK SEALING, SEE SPECIAL PROVISION.

FOR SECTIONS, B-B, AND C-C, SEE "JOINT DETAIL SHEET".

SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

AS-BUILT REPAIR QUANTITY TABLE							
DECK SURFACE REPAIRS							
		SPAN 1		SPAN 2		SPAN 3	
		ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
CLASS II SURFACE PREPARATION	SQ. YD.	2.8		1.2		4.6	
CLASS III SURFACE PREPARATION	SQ. YD.	--		--		--	
SHOTCRETE REPAIR AREA (SCR)	CU. FT.	--		--		--	
SHOTBLASTING BRIDGE DECK	SQ. YD.	458		458		458	
CONCRETE BRIDGE DECK CRACK SEALING	SQ. YD.	458		458		458	
CONCRETE DECK REPAIR FOR CONCRETE BRIDGE DECK CRACK SEALING	SQ. YD.	--		--		--	

VALUES IN CHART PRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT, SEE "SUPERSTRUCTURE REPAIR DETAILS".



PLAN

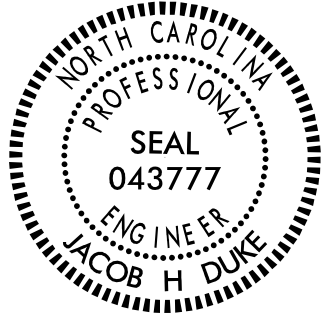
LEGEND

HMWM SEALER	BRIDGE JOINT DEMOLITION	CLASS II SURFACE PREP.	CLASS III SURFACE PREP.	CONCRETE WORK FOR JOINT REPLACEMENT	SHOTCRETE REPAIR AREA (SCR)

DRAWN BY : ALLEN J. MCSWAIN DATE : 10/2024
CHECKED BY : FIDEL L. FLORES DATE : 10/2024
DESIGN ENGINEER: JACOB H. DUKE DATE : 10/2024

10/8/2025
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fflores

Signed by:
Jacob Duke
2063100054E94D9
10/8/2025



PROJECT NO. 15BPR.149.3
WILKES COUNTY
BRIDGE NO. 960068

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR
SPANS 1-3

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RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			22

AS-BUILT REPAIR QUANTITIY TABLE												
	SPAN 1				SPAN 2				SPAN 3			
	ESTIMATE		ACTUAL		ESTIMATE		ACTUAL		ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA (SQ. FT.)	VOLUME (CU. FT.)	AREA (SQ. FT.)	VOLUME (CU. FT.)	AREA (SQ. FT.)	VOLUME (CU. FT.)	AREA (SQ. FT.)	VOLUME (CU. FT.)	AREA (SQ. FT.)	VOLUME (CU. FT.)	AREA (SQ. FT.)	VOLUME (CU. FT.)
	5.1	0.9			--	--			--	--		
CONCRETE REPAIRS	AREA (SQ. FT.)	VOLUME (CU. FT.)	AREA (SQ. FT.)	VOLUME (CU. FT.)	AREA (SQ. FT.)	VOLUME (CU. FT.)	AREA (SQ. FT.)	VOLUME (CU. FT.)	AREA (SQ. FT.)	VOLUME (CU. FT.)	AREA (SQ. FT.)	VOLUME (CU. FT.)
	--	--			--	--			--	--		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.		LIN. FT.		LIN. FT.		LIN. FT.		LIN. FT.	
	--		--		--		--		--		--	

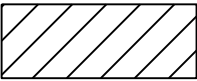
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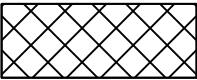
REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN IN THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTIONS OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES INTO THE AS-BUILT REPAIR QUANTITY TABLE.

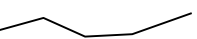
CONCRETE REPAIRS MAY BE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISION.

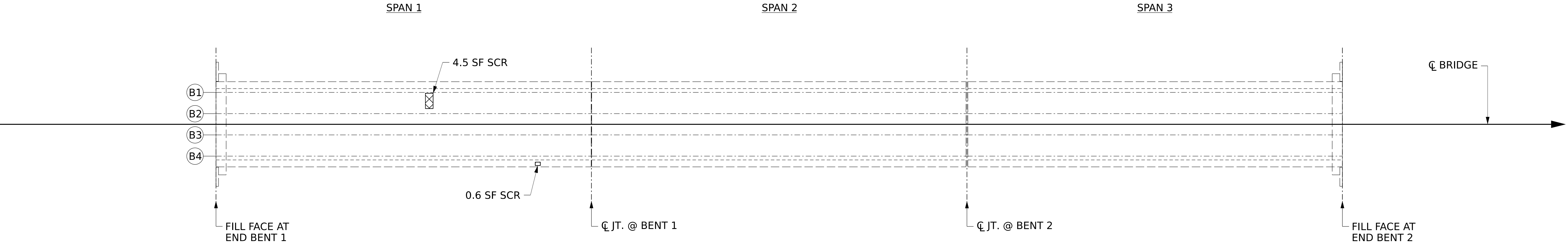
LEGEND

 CONCRETE REPAIR AREA (CR)

 SHOTCRETE REPAIR AREA (SCR)

 EPOXY RESIN INJECTION (ERI)

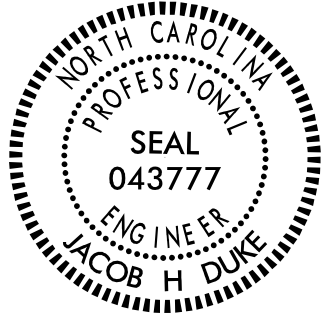
VALUES IN CHART PRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT, SEE "SUPERSTRUCTURE REPAIR DETAILS".



PLAN

PROJECT NO. 15BPR.149.3
WILKES COUNTY
BRIDGE NO. 960068

Signed by:
Jacob Duke
2053100054E94D9.
10/8/2025



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DEPARTMENT OF TRANSPORTATION
RALEIGH

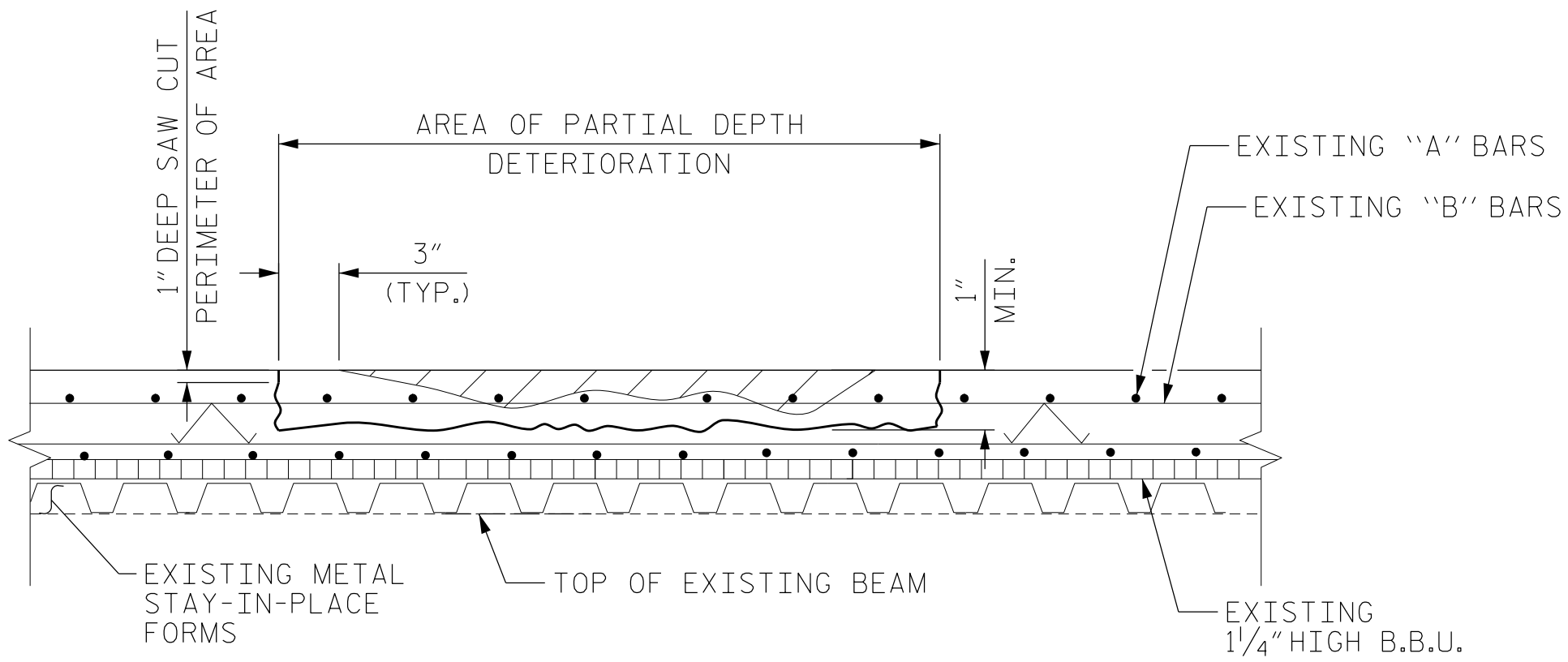
DECK UNDERSIDE REPAIRS
SPANS 1-3

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			22

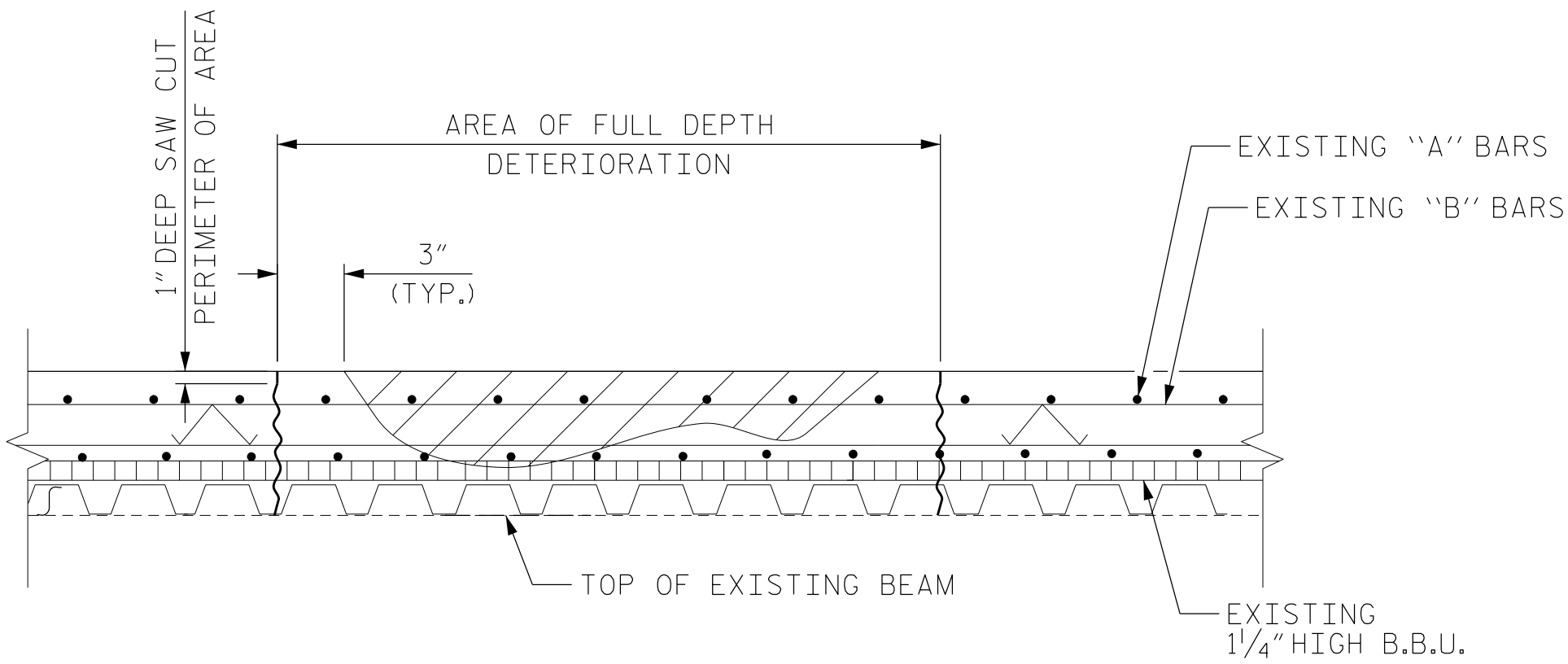
DRAWN BY : ALLEN J. MCSWAIN DATE : 10/2024
CHECKED BY : FIDEL L. FLORES DATE : 10/2024
DESIGN ENGINEER: JACOB H. DUKE DATE : 10/2024

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

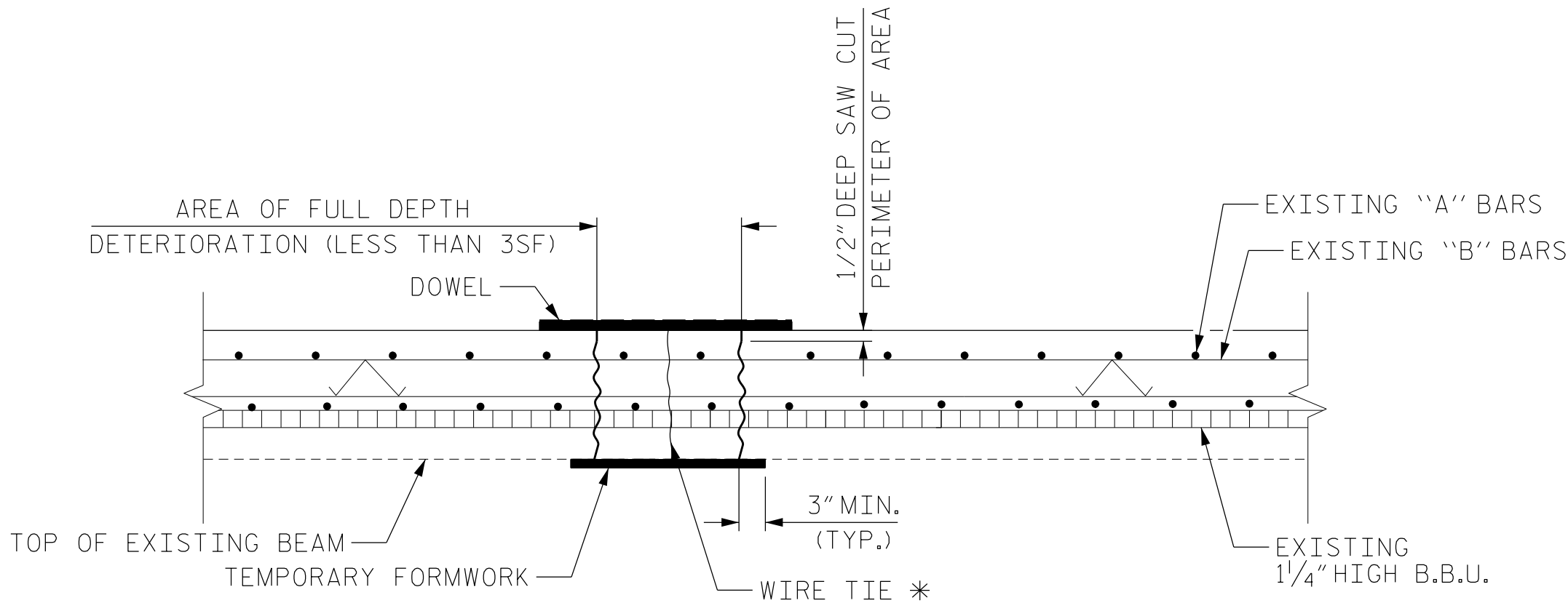
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506



CLASS II (PARTIAL DEPTH) REPAIR



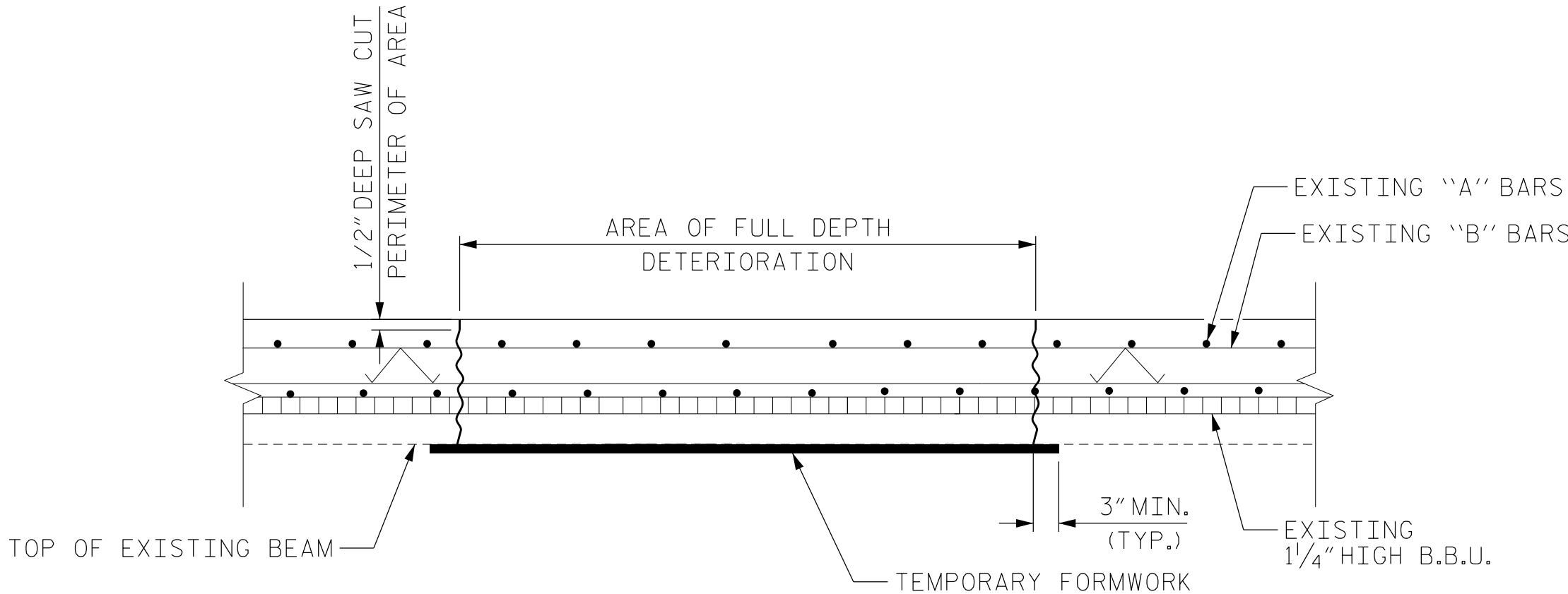
CLASS III (FULL DEPTH) REPAIR



FULL DEPTH REPAIR WITH TEMPORARY FORMWORK

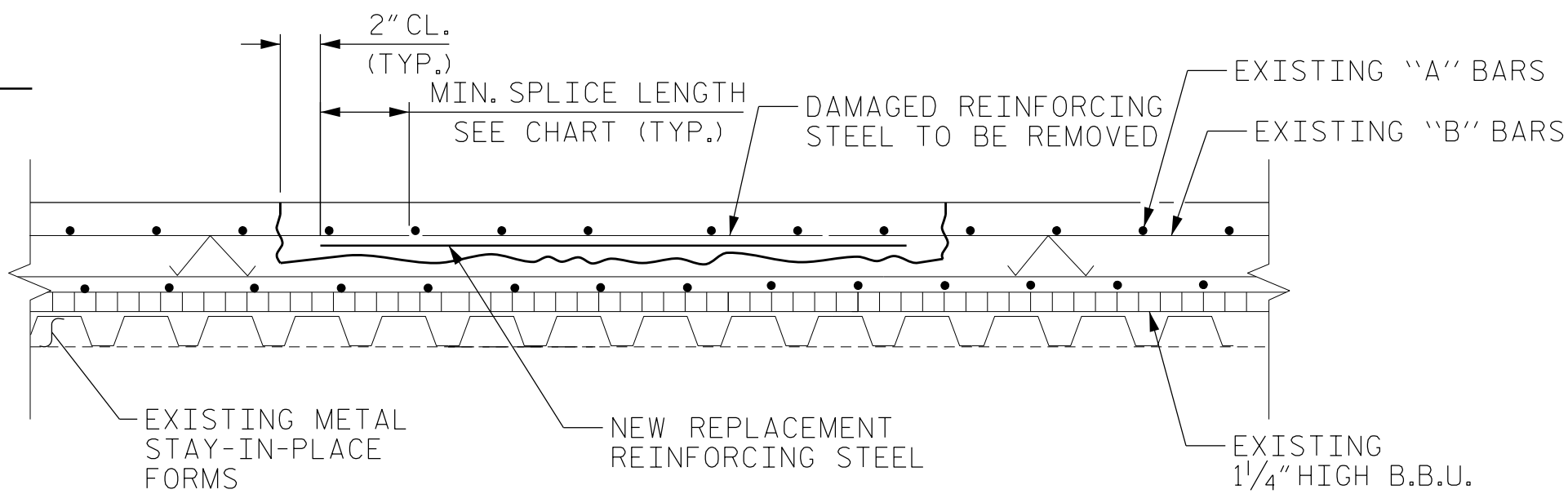
(FOR AREAS OF DETERIORATION EQUAL TO OR LESS THAN 3SF)

* WIRE TIE TO BE KNOTTED BELOW TEMPORARY FORMWORK AND ATTACHED TO DOWEL THAT IS WIDER THAN FORMED FULL DEPTH HOLE. ROTATE DOWEL TO TIGHTEN FORMWORK AGAINST BOTTOM OF DECK.



FULL DEPTH REPAIR WITH TEMPORARY FORMWORK

(FOR AREAS OF DETERIORATION GREATER THAN 3SF)



REINFORCING STEEL REPAIR

NOTES

FOR AREAS TO BE REPAIRED, SEE PLAN OF SPAN SHEETS & DECK UNDERSIDE REPAIR SHEETS.

FOR CLASS II AND CLASS III SURFACE PREPARATION, SEE DECK SURFACE PREPARATION SPECIAL PROVISION.

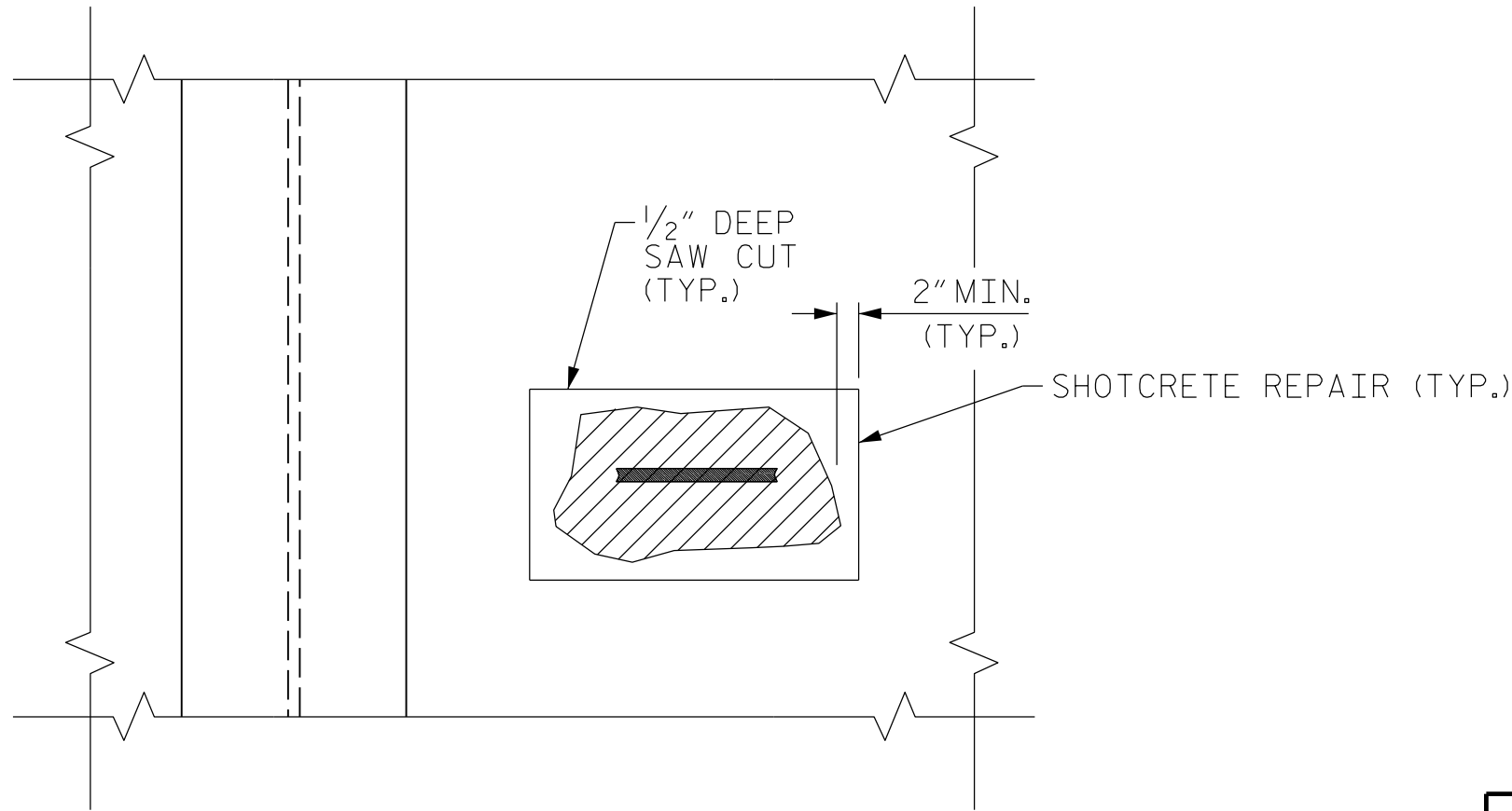
FOR REPAIR OF CLASS II AND CLASS III AREAS, SEE CONCRETE DECK REPAIR FOR CONCRETE BRIDGE DECK CRACK SEALING SPECIAL PROVISION.

FOR SHOTCRETE REPAIR, SEE SPECIAL PROVISIONS.

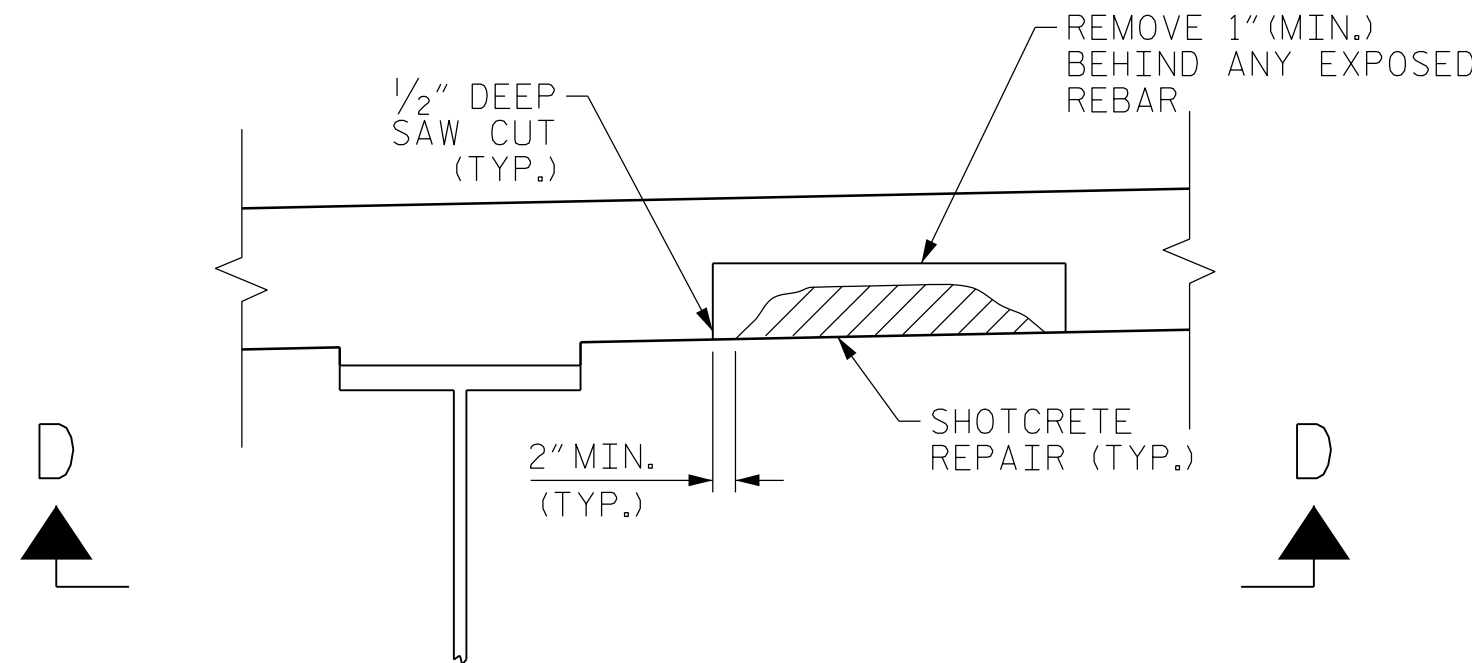
THE CONTRACTOR SHALL SUBMIT WORKING DRAWINGS TO THE ENGINEER FOR APPROVAL PRIOR TO STARTING WORK FOR TEMPORARY FORMWORK. FOR SUBMITTALS OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

UPON REMOVAL OF TEMPORARY FORMWORK, ALL VOIDS AND HONEYCOMBS ON THE UNDERSIDE OF DECK SURFACE SHALL BE FILLED WITH THE SAME MATERIAL AS USED FOR THE PATCH, AND FINISHED TO CONFORM TO THE SURROUNDING CONCRETE SURFACE.

NO FORMWORK SHALL BE LEFT IN PLACE.



SECTION D-D



TYPICAL SECTION

UNDERSIDE OF DECK REPAIR

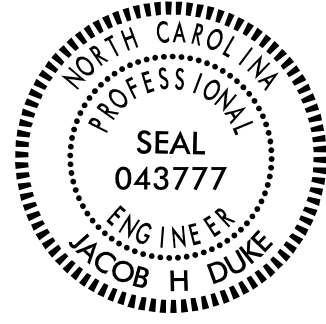
SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS					
BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	1'-11"	1'-7"	1'-11"	1'-7"	2'-6"
#5	2'-5"	2'-0"	2'-5"	2'-0"	3'-1"
#6	2'-10"	2'-5"	3'-7"	2'-5"	3'-8"
#7	4'-2"	2'-9"			
#8	4'-9"	3'-2"			

PROJECT NO. **15BPR.149.3**

WILKES COUNTY

BRIDGE NO. **960068**

Signed by:
Jacob Duke
29530C954E94D9
10/8/2025



KCA
KISINGER CAMPO
& ASSOCIATES

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

DECK REPAIR DETAILS

DRAWN BY : **ALLEN J. MCSWAIN** DATE : **10/2024**
CHECKED BY : **FIDEL L. FLORES** DATE : **10/2024**
DESIGN ENGINEER: **JACOB H. DUKE** DATE : **10/2024**

10/8/2025
15BPR.SMU_DRD01.dgn
fflores

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301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-8
2			4			

TOTAL
SHEETS
22

NOTES:

THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING JOINT OPENING PRIOR TO ORDERING JOINT SEAL MATERIAL. IF THE ACTUAL OPENING VARIES FROM THE OPENING INDICATED IN THE DETAIL BY MORE THAN ¼", NOTIFY THE ENGINEER. REVISION OF THE JOINT SEAL SIZE OR TYPE MIGHT BE NECESSARY.

THE MANUFACTURER IS TO PROVIDE THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL FOR THE SIZE OF THE OPENING ON THE PLANS AND ACCOMODATE THE MINIMUM EXPANSION SHOWN ON THE PLANS.

FOAM JOINTS SHALL BE INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATIONS.

THE CONTRACTOR SHALL TAKE CARE DURING JOINT REHAB OPERATIONS NOT TO DROP ANY MATERIAL THAT FALLS BELOW THE BRIDGE, WITHOUT PROTECTIVE DEVICES BELOW TO CATCH THE MATERIAL. ANY MATERIAL THAT FALLS BELOW THE BRDIGE SHALL BE CONTAINED, REMOVED AND DISPOSED OF BY THE CONTRACTOR AT NO EXTRA COST TO THE DEPARTMENT. IF THE ENGINEER DETERMINES THAT THE PROTECTIVE DEVICES ARE NOT ADEQUATE OR NOT BEING EMPLOYED, THE WORK SHALL BE SUSPENDED UNTIL ADEQUATE PROTECTION IS PROVIDED.

THE CONTRACTOR WILL NOT BE PERMITTED TO FORM THE JOINTS IN LIEU OF SAWING THE JOINT.

QUANTITIES SHOWN IN THE ELASTOMERIC CONCRETE FOR PRESERVATION TABLE IS BASED ON THE MINIMUM JOINT DEMOLITION SHOWN.

FOR EXCAVATION BELOW THE BOTTOM OF THE PLANNED JOINT DECK DEMOLITION, CONCRETE FOR DECK REPAIRS SHALL BE PLACED IN THE EXCAVATED AREA TO THE ELEVATION AT BOTTOM OF THE PROPOSED ELASTOMERIC CONCRETE SHOWN.

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR CONCRETE DECK REPAIR FOR CONCRETE BRIDGE DECK CRACK SEALING, SEE SPECIAL PROVISION.

IF THE EMBEDDED PORTION OF THE EXISTING PLASTIC WATERSTOP IS EXPOSED DURING REMOVAL OF UNSOUND CONCRETE, OR IF UNSOUND CONCRETE IS REMOVED WITHIN 2" OF THE WATERSTOP, THE ENTIRE CONCRETE DEPTH TO THE WATERSTOPS SHALL BE REMOVED. IF SUCH EXCAVATION EXTENDS MORE THAN 2" BELOW THE BOTTOM OF THE PLANNED ELASTOMERIC CONCRETE HEADER, AS SHOWN, APPROVED REPAIR CONCRETE SHALL BE PLACED IN THE EXCAVATED AREA TO THE ELEVATION AT THE BOTTOM OF THE ELASTOMETIC CONCRETE.

DEMOLISH BRIDGE JOINT AREA SUCH THAT THE BOTTOM OF THE EXCAVATION SHALL BE REASONABLY FLAT AND LEVEL AND TO THE NECESSARY DEPTH, SUCH THAT ELASTOMERIC CONCRETE SHALL BE FOUNDED ON CONCRETE OR REPAIR CONCRETE SUBSTRATE.

THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING JOINT OPENING PRIOR TO ORDERING JOINT SEAL MATERIAL. IF ACTUAL JOINT OPENING VARIES FROM THE OPENING INDICATED IN DETAIL BY MORE THAN ¾", NOTIFY THE ENGINEER. REVISION TO THE JOINT SEAL SIZE MIGHT BE NECESSARY.

PROJECT NO. 15BPR.149.3
WILKES COUNTY
BRIDGE NO. 960068

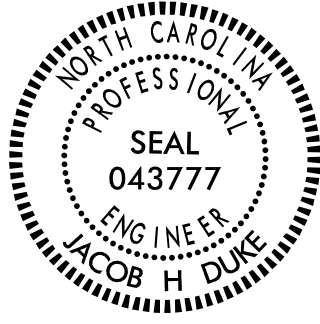
SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

JOINT DETAILS

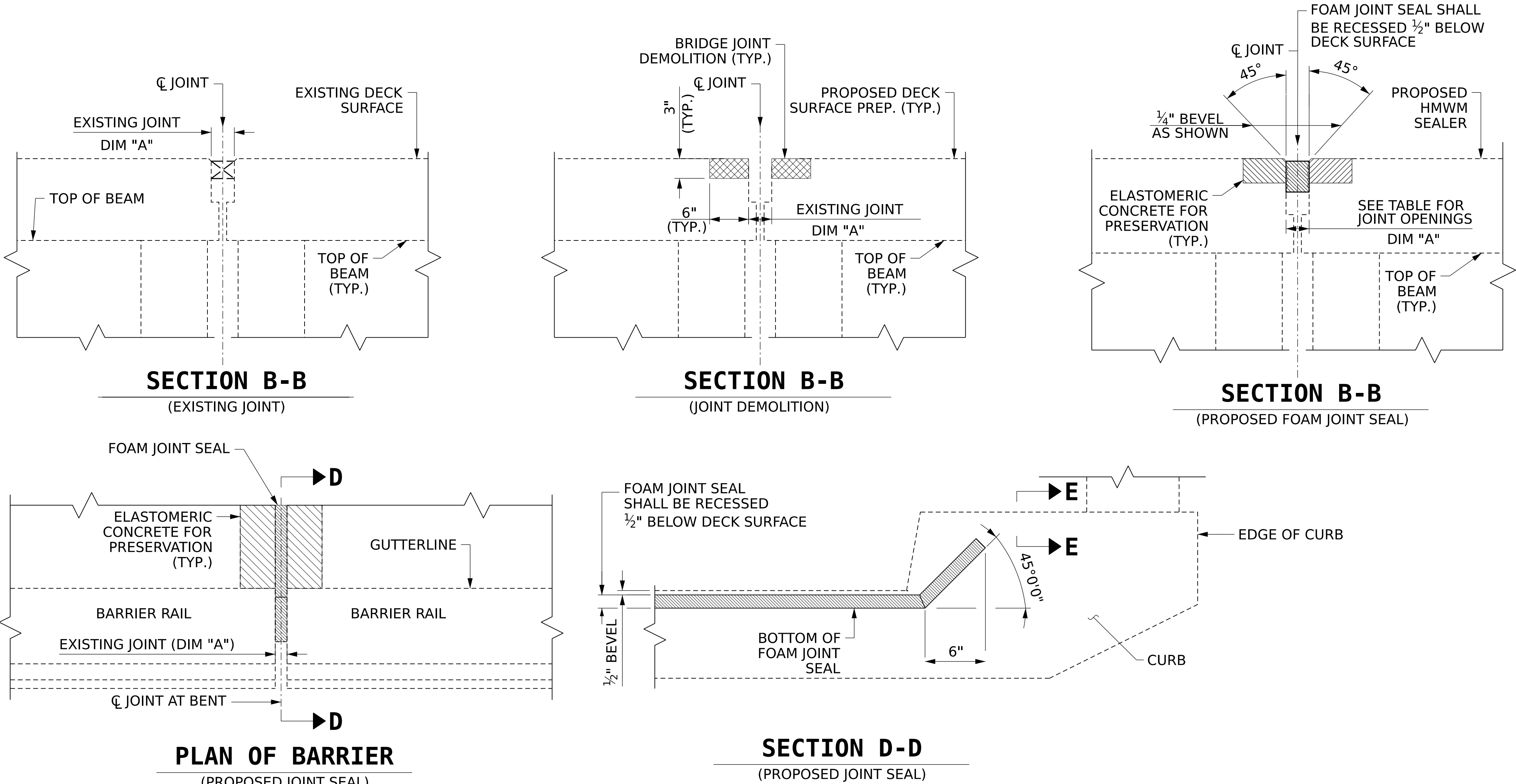
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			22

Signed by:
Jacob Duke
2053010054E9409.
10/8/2025



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RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

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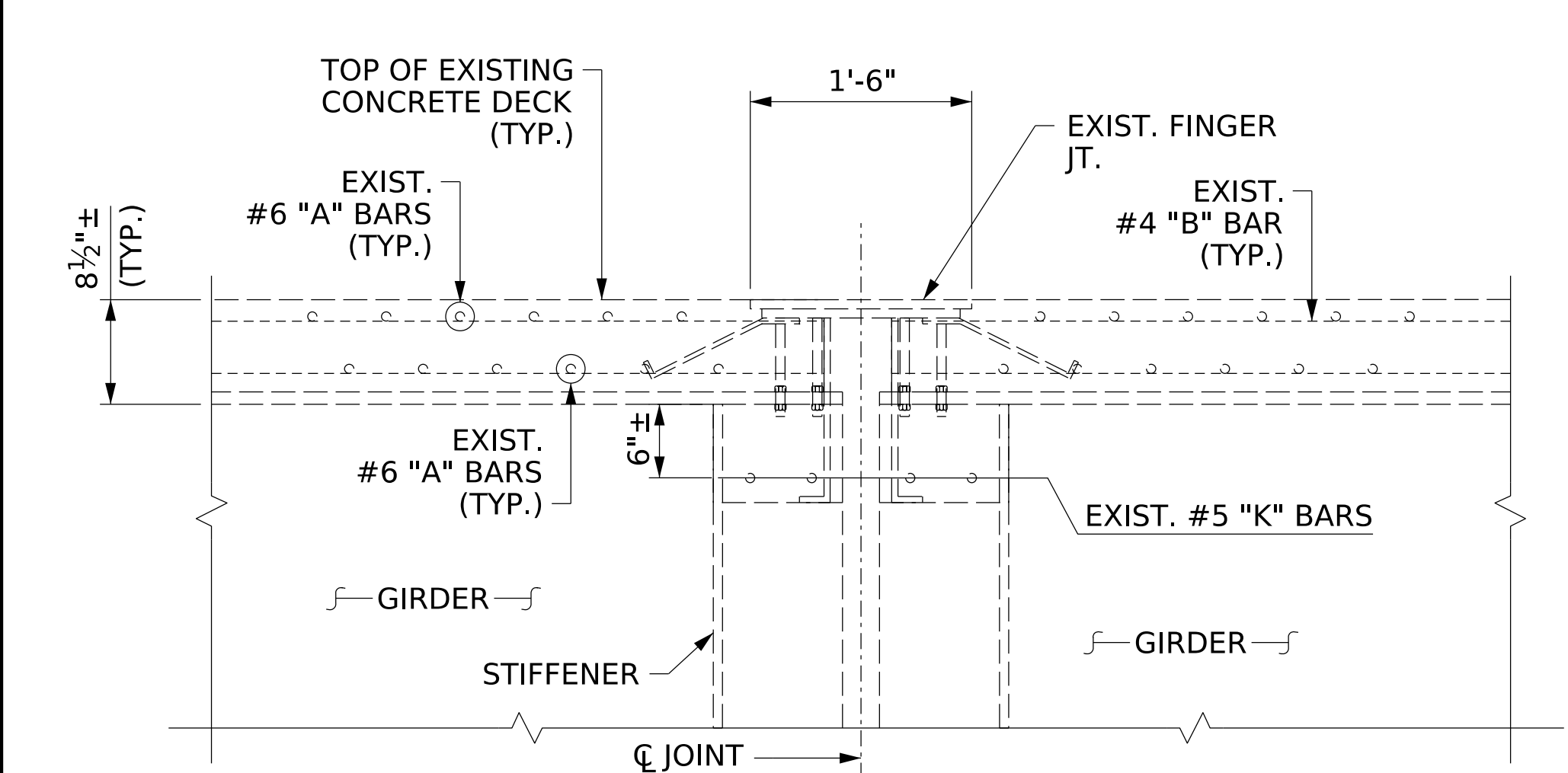
ELASTOMERIC CONCRETE FOR PRESERVATION		
LOCATION	ESTIMATED (CU. FT.)	ACTUAL (CU.FT.)
BENT 1	7.0	

BRIDGE JOINT DEMOLITION		
LOCATION	ESTIMATED (SF.FT.)	ACTUAL (SF.FT.)
BENT 1	16.4	

PROPOSED JOINT QUANTITY		
	ESTIMATED (LIN.FT.)	ACTUAL (LIN.FT.)
FOAM JOINT SEALS FOR PRESERVATION	31.0	

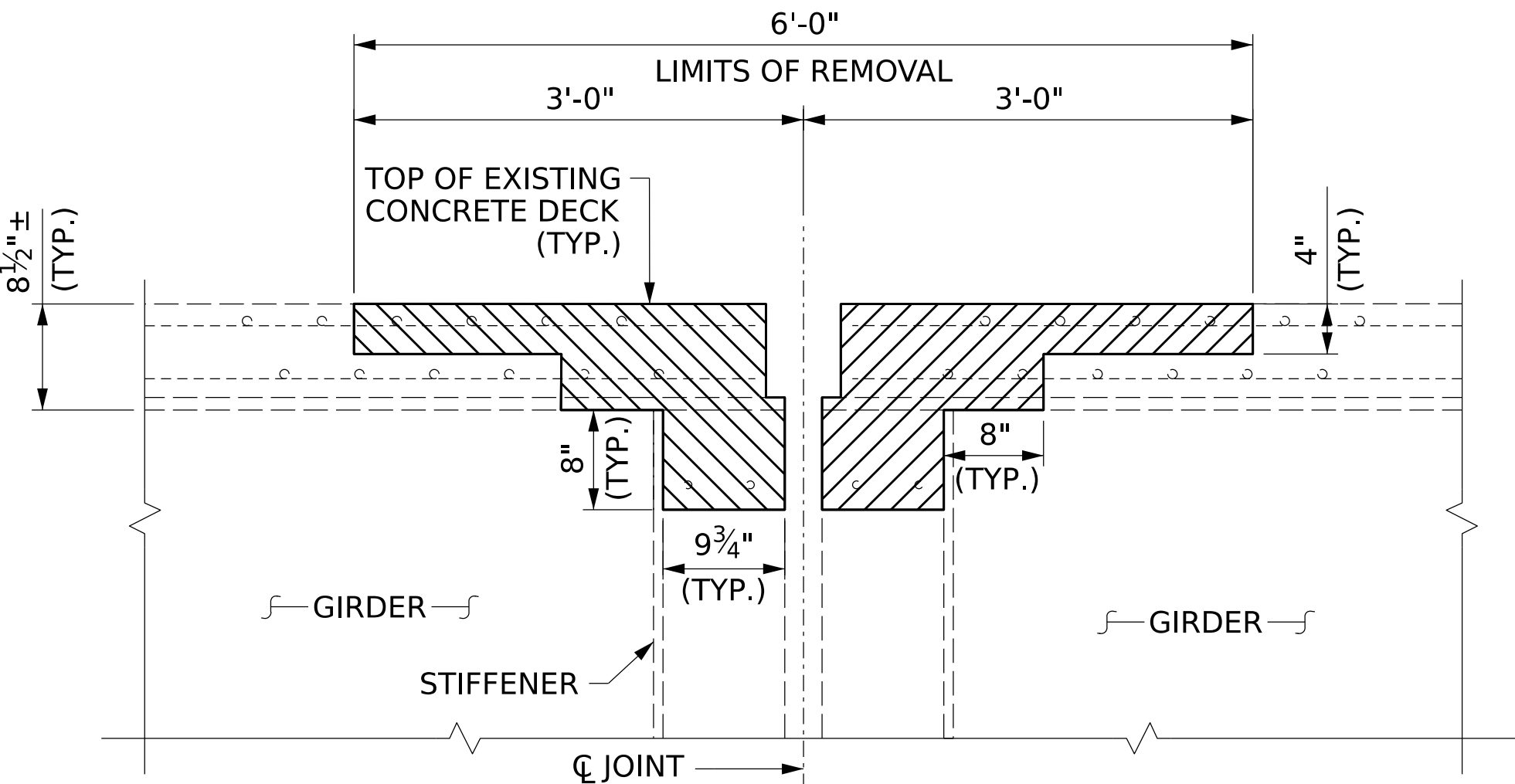
TABLE 1				
TABLE DATE 10/21/24 AT 54°		SAWED JT. OPENING (PERPENDICUAL TO JT.)		
BENT / JOINTS	DIM "A"*	45°	60°	90°
END BENT 1	N/A			
BENT 1	2¾"	2 ¹³ / ₁₆ "	2 ¹¹ / ₁₆ "	2 ⁹ / ₁₆ "
BENT 2	2"	2 ¹ / ₁₆ "	1 ¹⁵ / ₁₆ "	1 ¹³ / ₁₆ "
END BENT 2	N/A			

DRAWN BY : ALLEN J. MCSWAIN DATE : 10/2024
CHECKED BY : FIDEL L. FLORES DATE : 10/2024
DESIGN ENGINEER: JACOB H. DUKE DATE : 10/2024



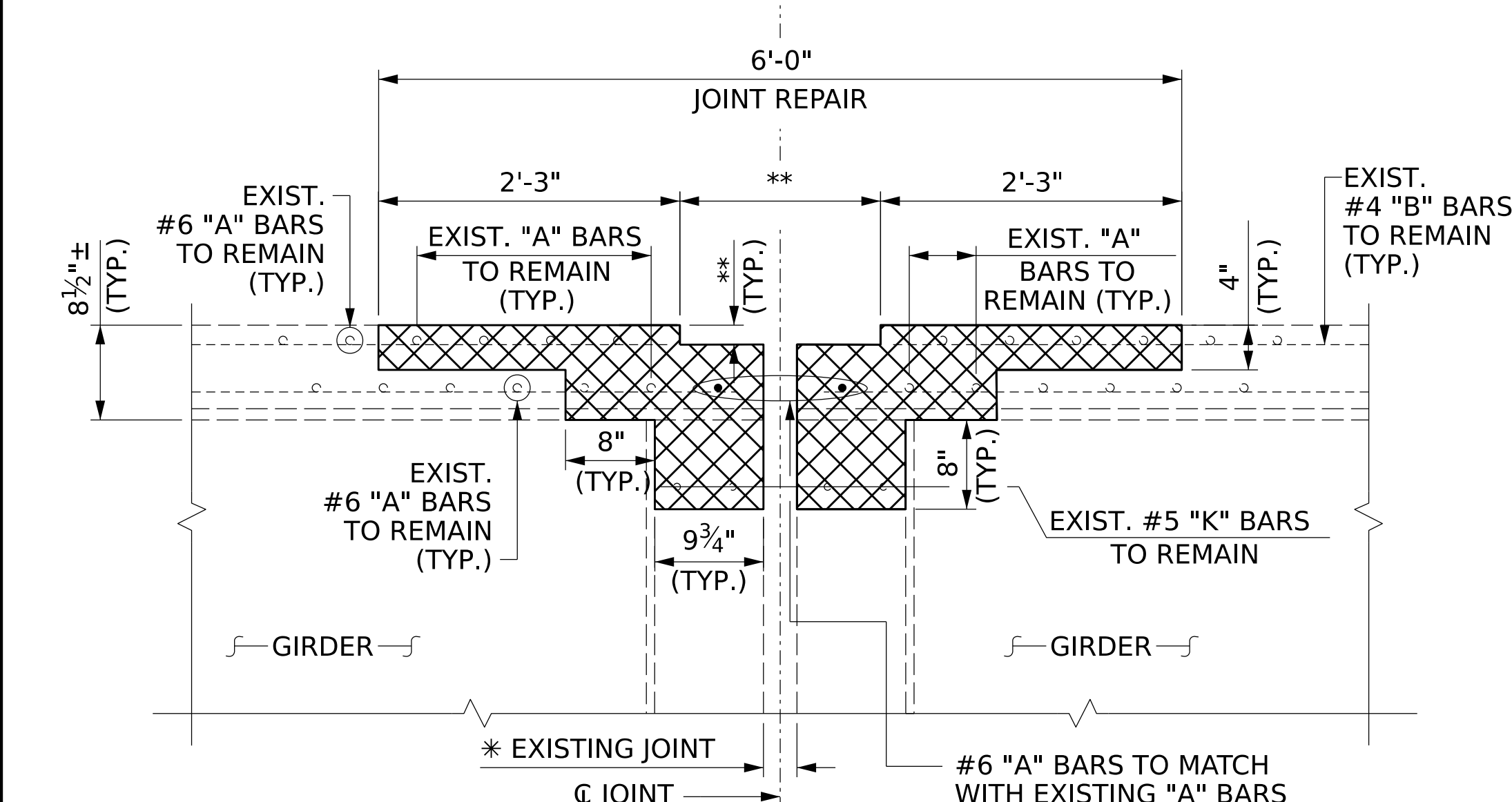
SECTION C-C

EXISTING FINGER JOINT
* JOINT DETAIL SHEET 1 OF 1, TABLE 1



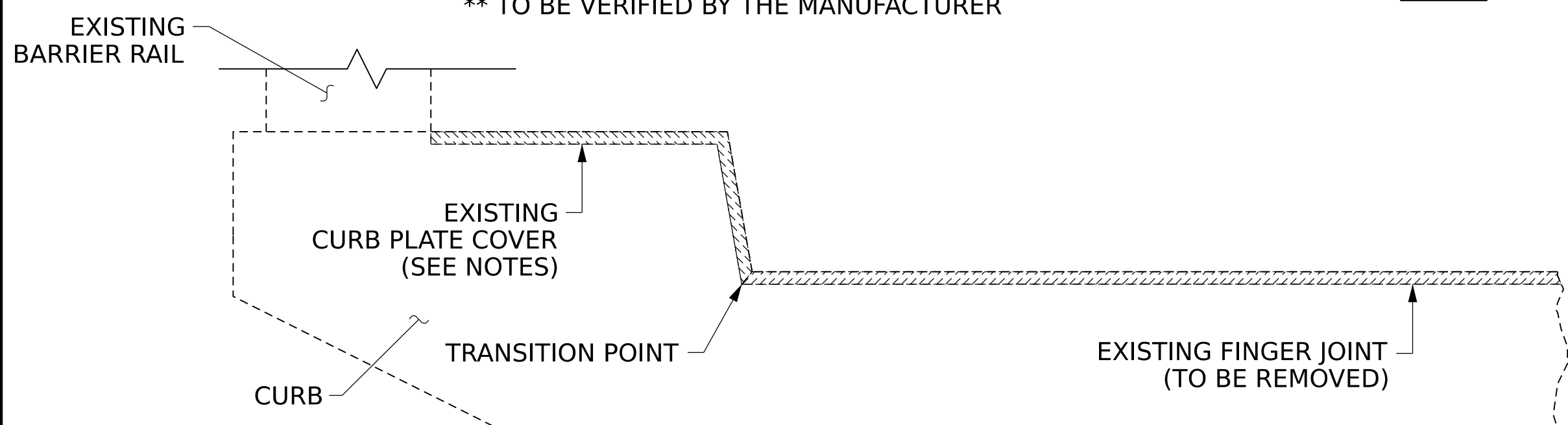
SECTION C-C

EXISTING JOINT DEMOLITION
* JOINT DETAIL SHEET 1 OF 1, TABLE 1

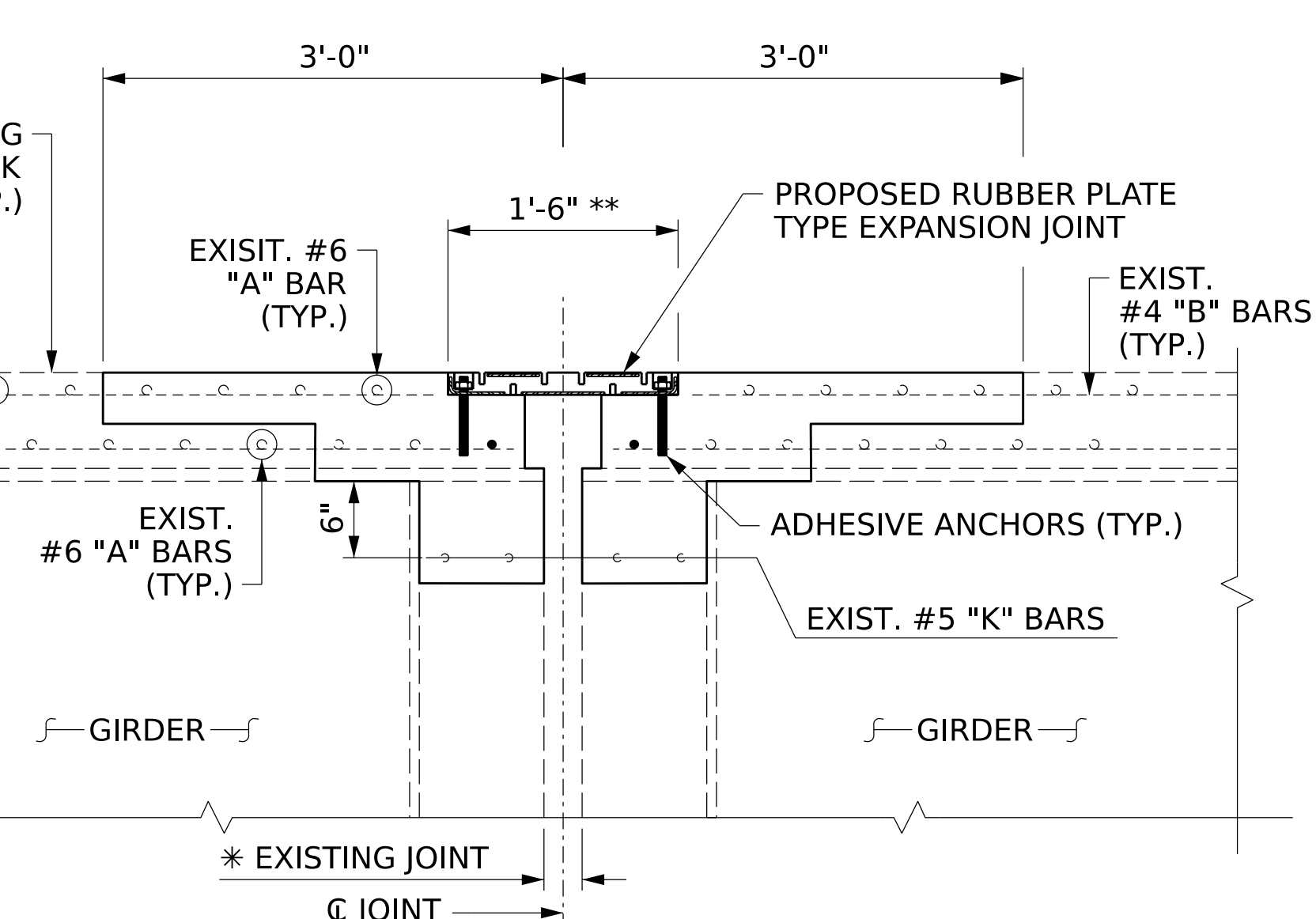


SECTION C-C

PROPOSED CONCRETE AND REBAR
* JOINT DETAIL SHEET 1 OF 1, TABLE 1
** TO BE VERIFIED BY THE MANUFACTURER

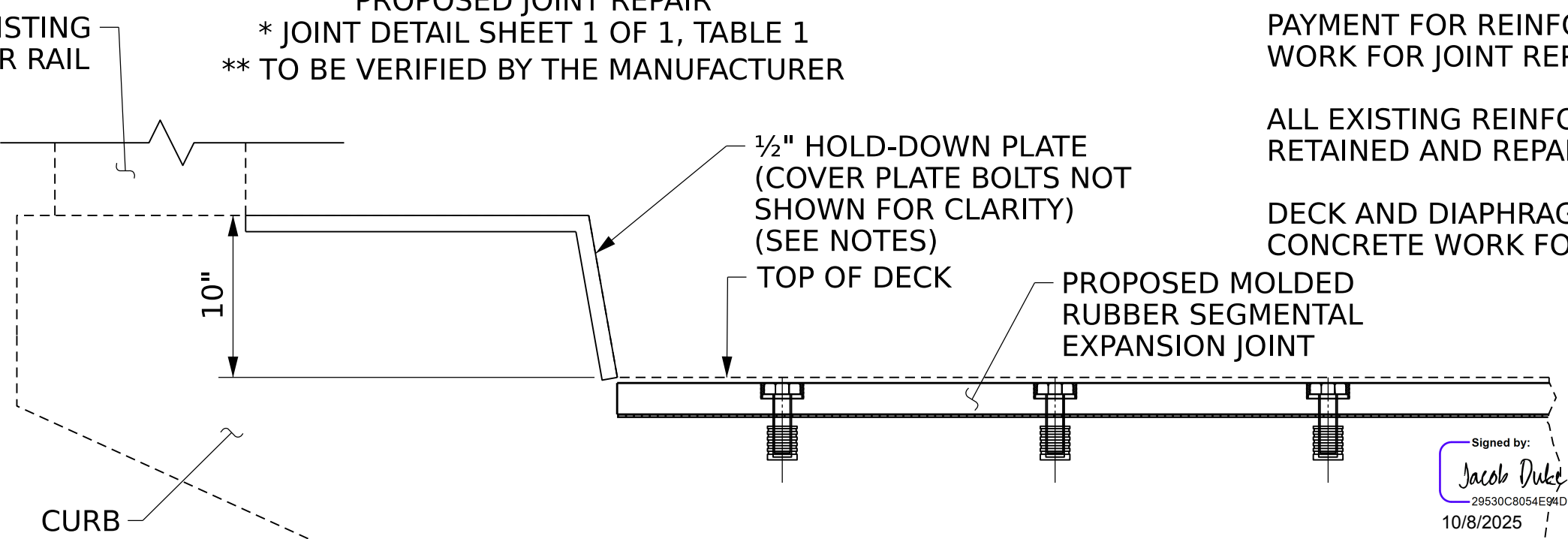


EXISTING SECTION THRU RAIL NORMAL TO JOINT



SECTION C-C

PROPOSED JOINT REPAIR
* JOINT DETAIL SHEET 1 OF 1, TABLE 1
** TO BE VERIFIED BY THE MANUFACTURER



PROPOSED SECTION THRU RAIL NORMAL TO JOINT

NOTES

FINAL JOINT SEALS SHALL NOT BE INSTALLED UNTIL ALL OTHER SEALANT WORK IS COMPLETED.

THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING JOINT OPENING AND BEAM END SPACING PRIOR TO ORDERING JOINT SEAL MATERIAL. IF THE ACTUAL OPENING VARIES FROM THE OPENING INDICATED IN THE DETAIL BY MORE THAN 1/4", NOTIFY THE ENGINEER. REVISION OF THE JOINT SEAL SIZE MIGHT BE NECESSARY.

CONTRACTOR SHALL SAW CUT TO A NOMINAL DEPTH OF 1/2" BUT REINFORCING STEEL SHALL NOT BE DAMAGED. CONTRACTOR SHALL REMOVE SURFACE CONCRETE TO VERIFY THAT SAWCUT DEPTH WILL NOT DAMAGE EXISTING REINFORCING STEEL.

MOLDED RUBBER SEGMENTAL EXPANSION JOINTS SHALL BE INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATIONS.

THE CONTRATOR SHALL HAVE A REPRESENTATIVE FORM THE JOINT MANUFACTURER PRESENT DURING INSTALLATION FOR PROPOSED MODULAR EXPANSION JOINT.

THE CONTRACTOR SHALL TAKE CARE DURING JOINT REHAB OPERATIONS NOT TO DROP ANY MATERIAL BELOW THE BRIDGE, WITHOUT PROTECTIVE DEVICES BELOW TO CATCH THE MATERIAL. ANY MATERIAL THAT FALLS BELOW THE BRIDGE SHALL BE CONTAINED, REMOVED AND DISPOSED OF BY THE CONTRACTOR AT NO EXTRA COST TO THE DEPARTMENT. IF THE ENGINEER DETERMINES THAT THE PROTECTIVE DEVICES ARE NOT ADEQUATE OR NOT BEING EMPLOYED, THE WORK SHALL BE SUSPENDED UNTIL ADEQUATE PROTECTION IS PROVIDED.

THE INSTALLED MOLDED RUBBER SEGEMENTAL EXPANSION JOINTS SHALL BE WATER TIGHT.

FOR MOLDED RUBBER SEGMENTAL EXPANSION JOINTS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

THE EXCAVATED AREA SHALL BE SUFFICIENT TO ALLOW THE MOLDED RUBBER SEGMENTAL EXPANSION JOINT ASSEMBLY TO BE INSTALLED. CONCRETE FOR DECK REPAIR SHALL BE PLACED IN THE EXCAVATED AREA TO ACCOMMODATE THE MOLDED RUBBER SEGMENTAL EXPANSION JOINT.

FOR CONCRETE WORK FOR JOINT REPLACEMENT, SEE SPECIAL PROVISIONS.

FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.

THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW, A PLAN FOR THE EXISTING CURB PLATE COVERS. THE CONTRACTOR MAY ELECT TO RETAIN EXISTING CURB PLATE COVERS BY PROVIDING A PLAN TO RETAIN EXISTING PLATE COVERS, REMOVING EXISTING CURB PLATE COVERS AND INSTALLING A SILICONE JOINT SEAL OR INSTALLING OTHER MANUFACTURE RECOMMENDATIONS. PAYMENT FOR WORK TO RETROFIT CURB RAMP COVERS IS INCIDENTAL TO THE COST OF THE PROPOSED MOLDED RUBBER SEGMENTAL EXPANSION JOINT.

FOR ADHESIVELY ANCHOR BOLTS AND HARDWARE FOR THE PROPOSED EXPANSION JOINT SHALL BE GALVANIZED PER ASTM A153 AND INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS.

REINFORCEMENT MAY BE SHIFTED SLIGHTLY.

REINFORCEMENT SHOULD MEET NCDOT STANDARD SPECIFICATIONS.

PAYMENT FOR REINFORCEMENT SHALL BE INCIDENTAL TO PROPOSED CONCRETE WORK FOR JOINT REPLACEMENT.

ALL EXISTING REINFORCEMENT STEEL EXPOSED BY DEMOLITION SHALL BE RETAINED AND REPAIRED AS DIRECTED BY THE ENGINEER.

DECK AND DIAPHRAGM REMOVAL TO BE MEASURED AND PAID FOR UNDER CONCRETE WORK FOR JOINT REPLACEMENT.

PROJECT NO. **15BPR.149.3**

WILKES COUNTY

BRIDGE NO. **960068**

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

JOINT DETAILS

DRAWN BY : **ALLEN J. MCSWAIN** DATE : **10/2024**
CHECKED BY : **FIDEL L. FLORES** DATE : **10/2024**
DESIGN ENGINEER: **JACOB H. DUKE** DATE : **10/2024**

10/8/2025
15BPR-SMU_JT02.dgn
fflores

NOTE: PAY ITEM IN PROVISION IS LUMP SUM. QUANTITY PROVIDED FOR BID PURPOSES.

PROPOSED JOINT QUANTITY		
	ESTIMATED (LIN.FT.)	ACTUAL (LIN.FT.)
MOLDED RUBBER SEGMENTAL EXPANSION JOINT	28.0	

PROPOSED CONCRETE WORK FOR JOINT REPLACEMENT QUANTITY		
	ESTIMATED (SQ.FT.)	ACTUAL (SQ.FT.)
CONCRETE WORK FOR JOINT REPLACEMENT	72.0	

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RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

AS-BUILT REPAIR QUANTITY TABLE		
ITEMS:	ESTIMATE	ACTUAL
INCIDENTAL MILLING	SQ. YD.	SQ. YD.
	312	
ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5C	TON	TON
	27	
ASPHALT BINDER FOR PLANT MIX	TON	TON
	1.6	

KEY:

INCIDENTAL MILLING

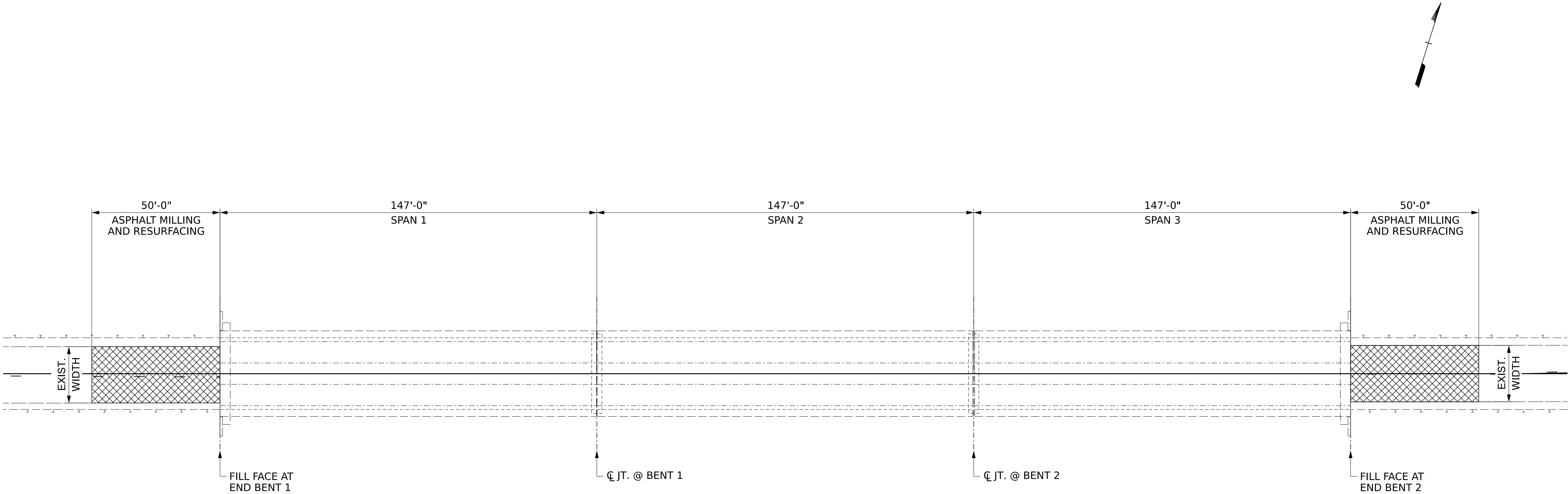
ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C

C1

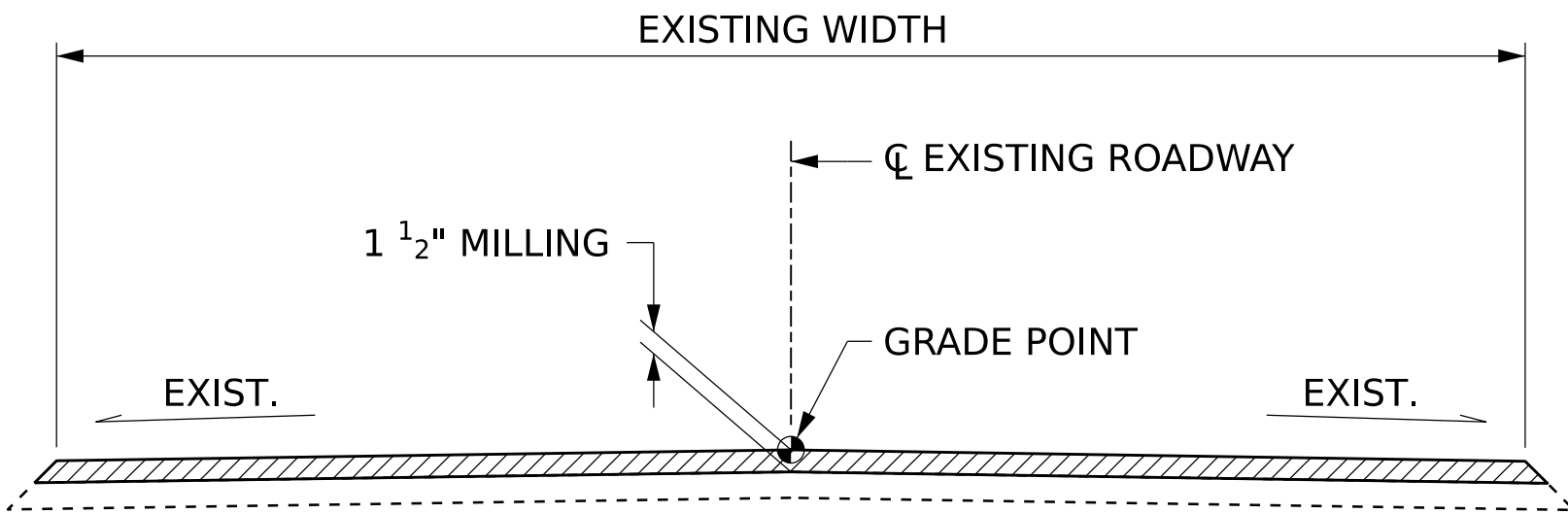
PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1" OR GREATER THAN 2" IN DEPTH.

NOTES:

1. INCIDENTAL MILLING - EXISTING APPROACH ASPHALT PAVEMENT TO BE MILLED AS NECESSARY TO ATTAIN MINIMUM 1½" DEPTH OF NEW ASPHALT PAVEMENT. NEW ASPHALT PAVEMENT SHALL BE OF THICKNESS NECESSARY TO PROVIDE A SMOOTH TRANSITION BETWEEN THE ROADWAY AND THE BRIDGE DECK. THE NEW ASPHALT PAVEMENT THICKNESS MAY EXCEED 1½" DUE TO SETTLEMENT OF THE EXISTING APPROACH.
2. FOR NEW ASPHALT PLACEMENT, SEE STANDARD SPECIFICATIONS.
3. GRADE MAY BE ADJUSTED BY THE ENGINEER TO ENSURE PROPER TIE-IN AT THE END BENTS.
4. FOR PAVEMENT MARKINGS PLANS, SEE PMP-01.

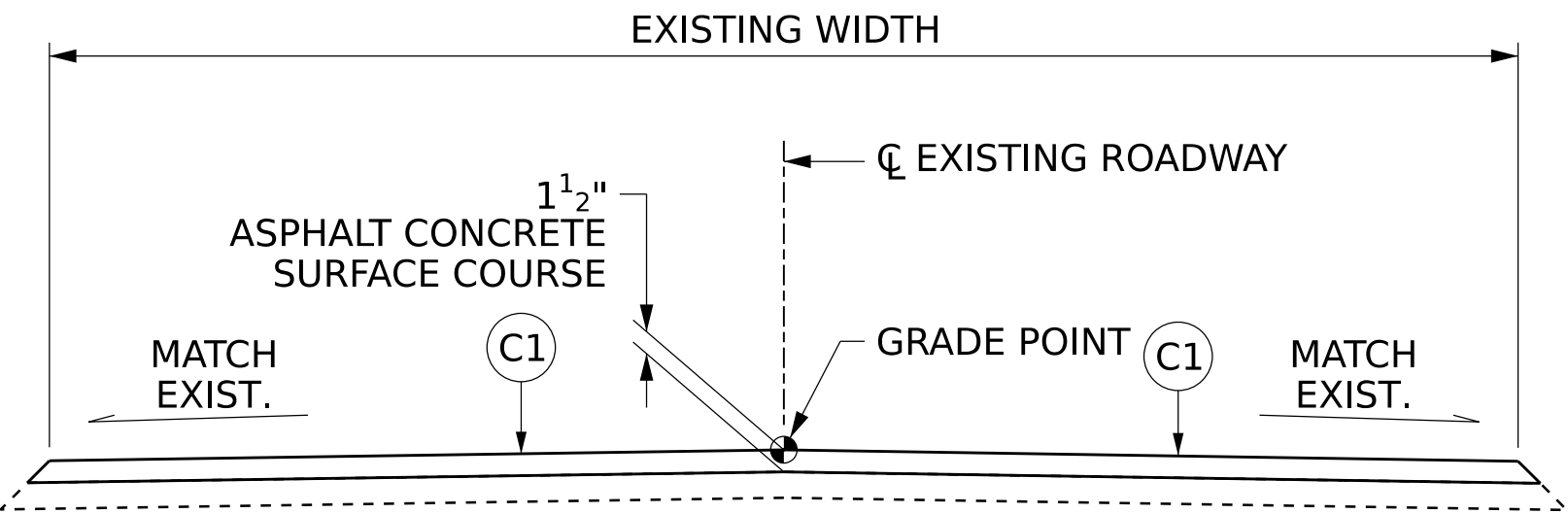


PLAN



TYPICAL ROADWAY MILLING SECTION

BEGIN / END BRIDGE

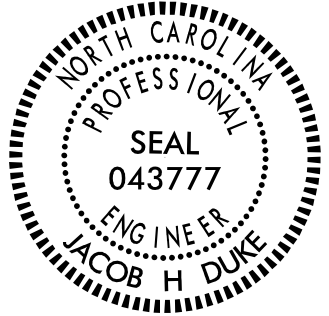


TYPICAL PROPOSED ROADWAY SECTION

BEGIN / END BRIDGE

PROJECT NO. 15BPR.149.3
WILKES COUNTY
BRIDGE NO. 960068

Signed by:
Jacob Duke
2053100054E94D9.
10/8/2025



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

INCIDENTAL MILLING & TYPICAL ROADWAY SECTION

DRAWN BY : ALLEN J. MCSWAIN DATE : 10/2024
CHECKED BY : FIDEL L. FLORES DATE : 10/2024
DESIGN ENGINEER: JACOB H. DUKE DATE : 10/2024

10/8/2025
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RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			22

AS-BUILT REPAIR QUANTITY TABLE						
	SPAN 1		SPAN 2		SPAN 3	
	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
CLEANING AND PAINTING EXISTING BEARINGS WITH HRSCA	EA.	EA.	EA.	EA.	EA.	EA.
	4		4		4	
PAINTING EXISTING STRUCTURAL STEEL	AREA (SQ. FT.)	AREA (SQ. FT.)	AREA (SQ. FT.)	AREA (SQ. FT.)	AREA (SQ. FT.)	AREA (SQ. FT.)
	12,625		12,625		12,625	
TYPE I BRIDGE JACKING	EA.	EA.	EA.	EA.	EA.	EA.
	4		4		4	

NOTES:

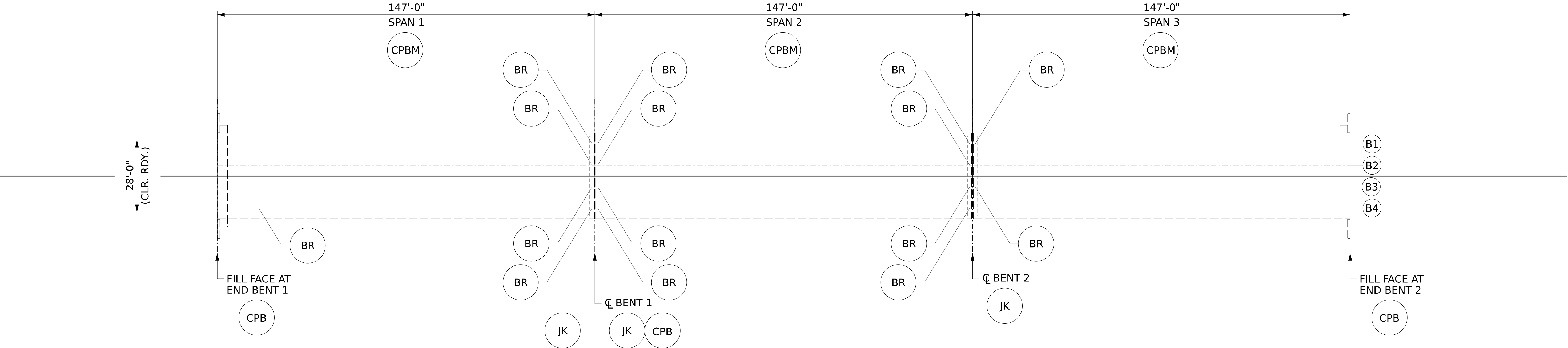
FOR CLEANING & PAINTING EXISTING BEARING WITH HRCSA, SEE SPECIAL PROVISIONS.

FOR PAINTING EXISTING STEEL, SEE SPECIAL PROVISIONS.

AREAS WHERE CLEANING AND PAINTING ARE CALLED OUT INCLUDE CLEANING AND PAINTING ALL STRUCTURAL STEEL COMPONENTS.

FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

FOR BEAM REPAIR CUT-OUT, SEE SPECIAL PROVISIONS.



PLAN

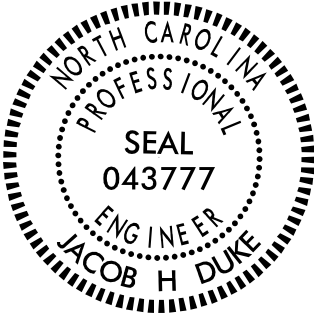
KEY:

- CPB CLEAN AND PAINT ALL BEARINGS AT END BENT / BENTS AS INDICATED
- CPBM CLEAN AND PAINT BEAM
- JK BRIDGE JACKING
- BR BEAM REPAIR
- # BEAM NUMBER

DRAWN BY : ALLEN J. MCSWAIN DATE : 10/2024
CHECKED BY : FIDEL L. FLORES DATE : 10/2024
DESIGN ENGINEER: JACOB H. DUKE DATE : 10/2024

10/8/2025
15BPR.SMU.SSR01.dgn
fflores

Signed by:
Jacob Duke
2053100054E94D9
10/8/2025



PROJECT NO. 15BPR.149.3

WILKES COUNTY

BRIDGE NO. 960068

SHEET 1 OF 2

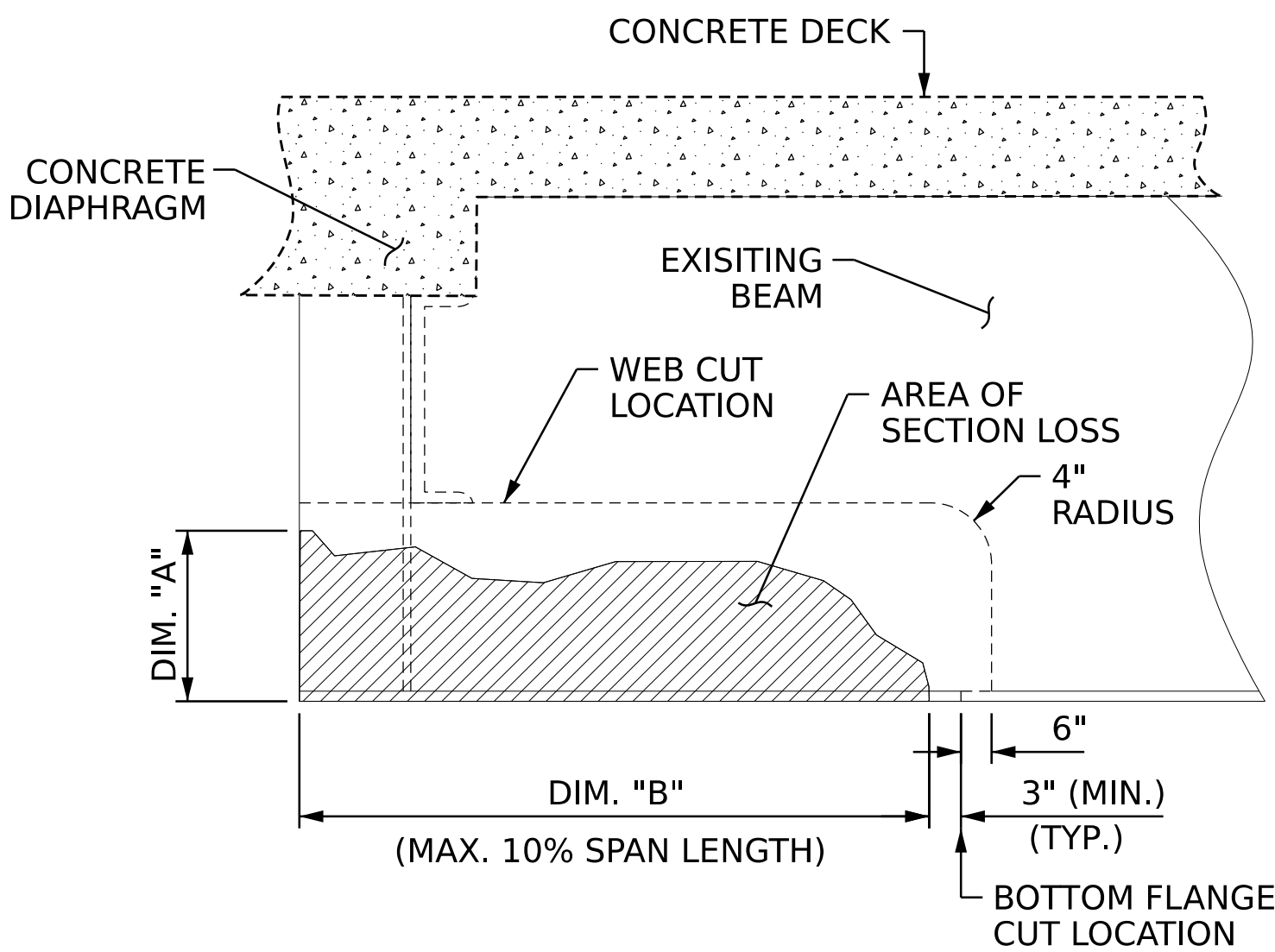
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
REPAIRS
SPANS 1-3

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

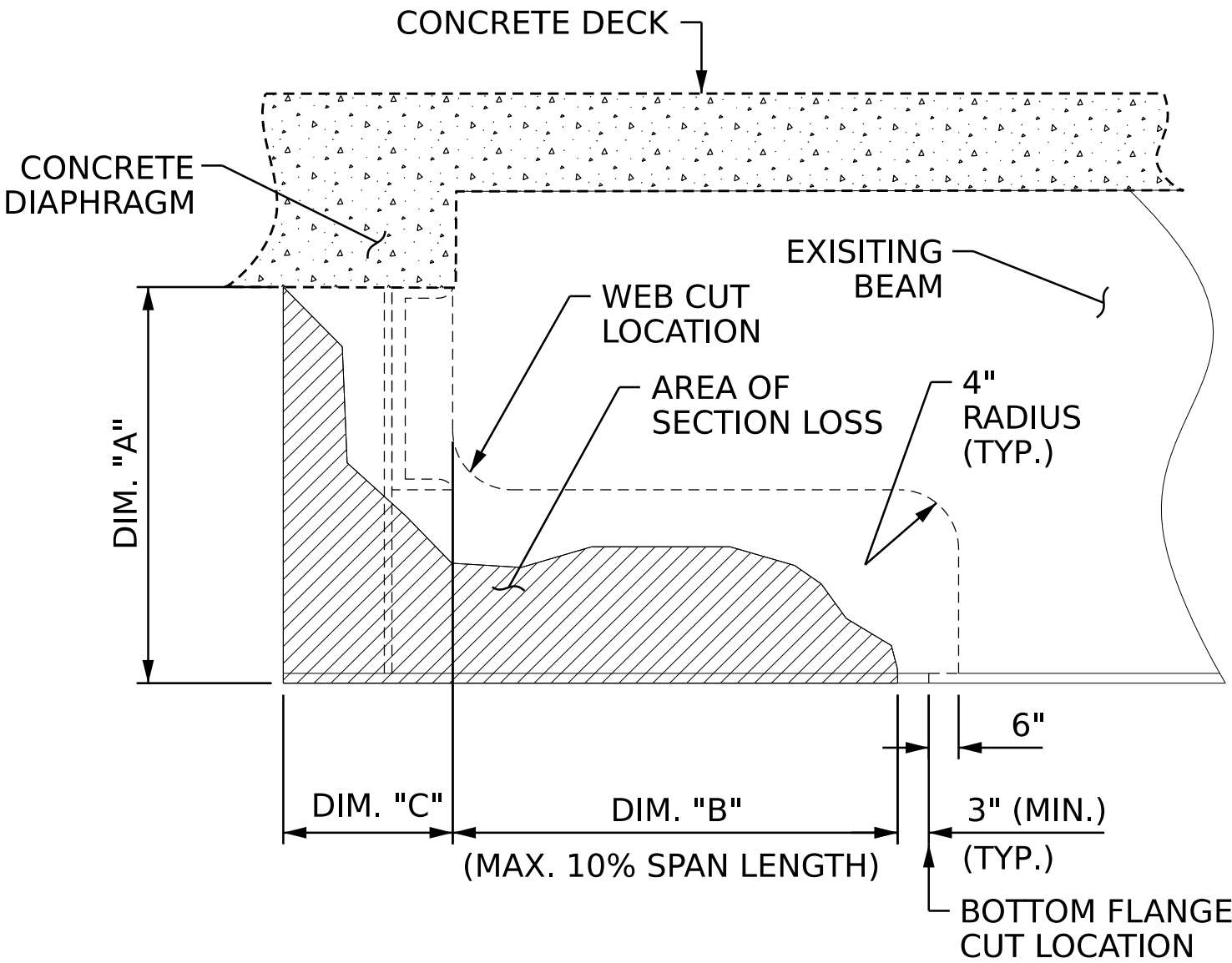
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NC FIRM LICENSE: C-1506

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			22



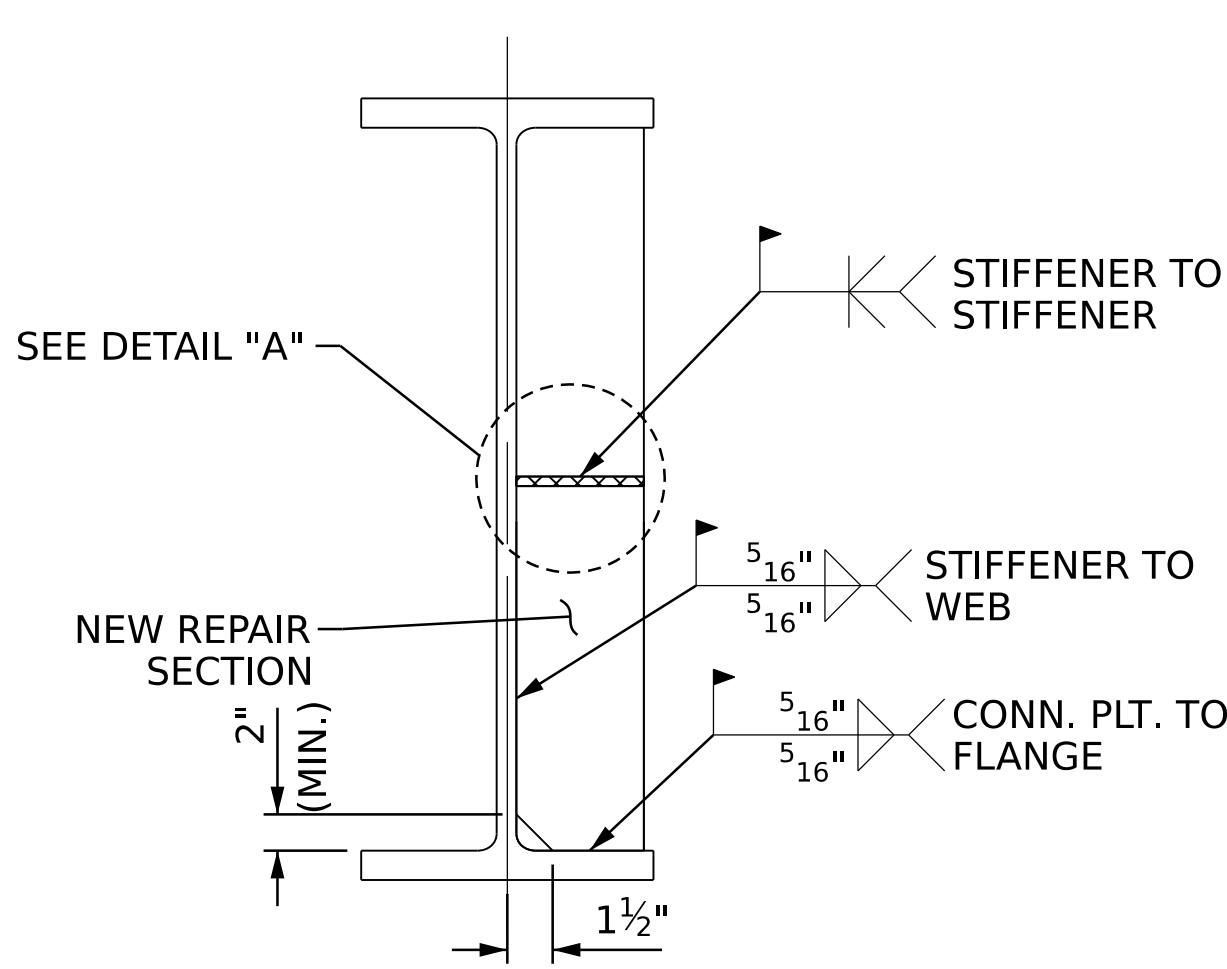
SECTION LOSS BEAM END SECTION

(NON-FULL HEIGHT REPAIR)

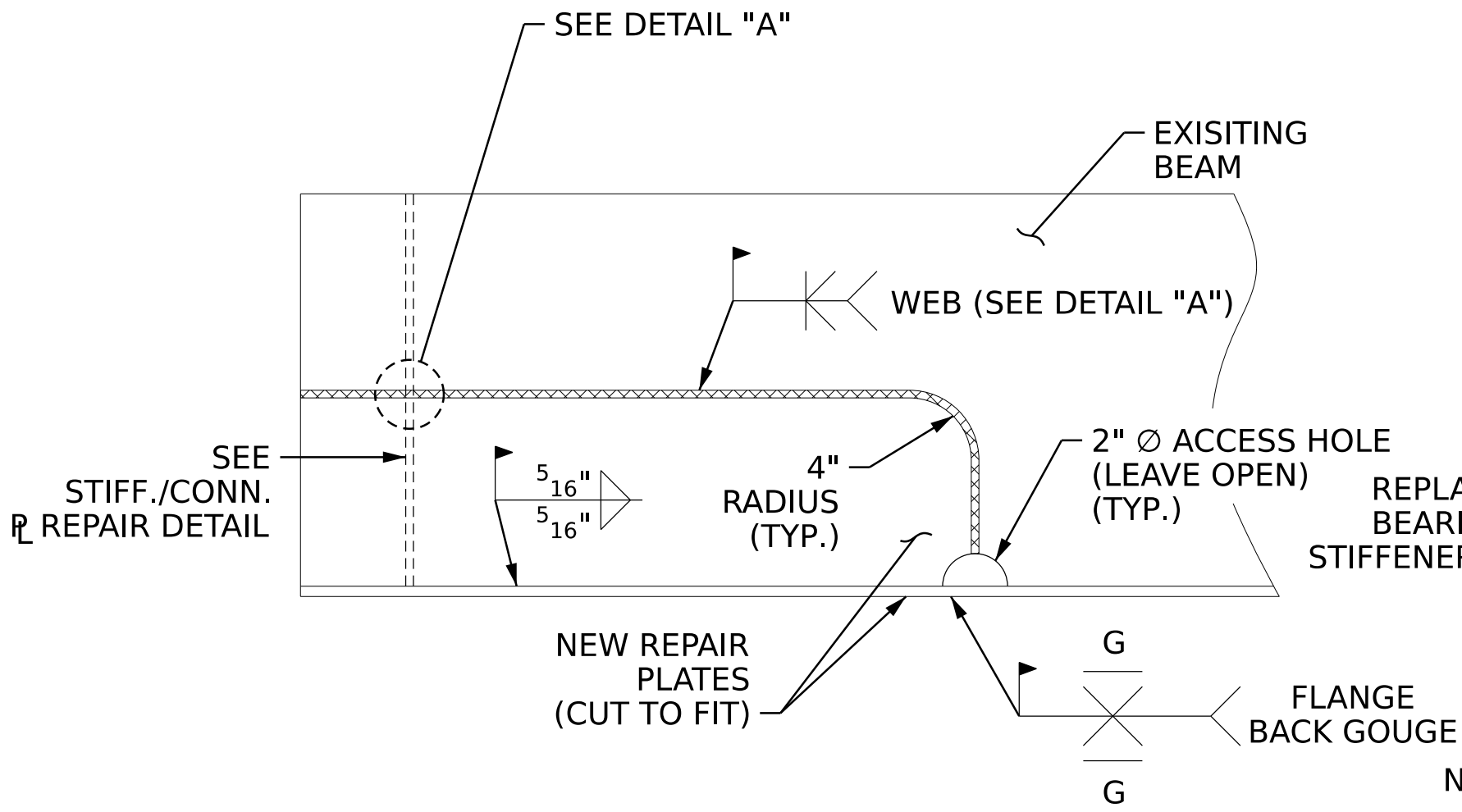


SECTION LOSS REMOVAL

(PARTIAL-LENGTH, FULL HEIGHT REPAIR)

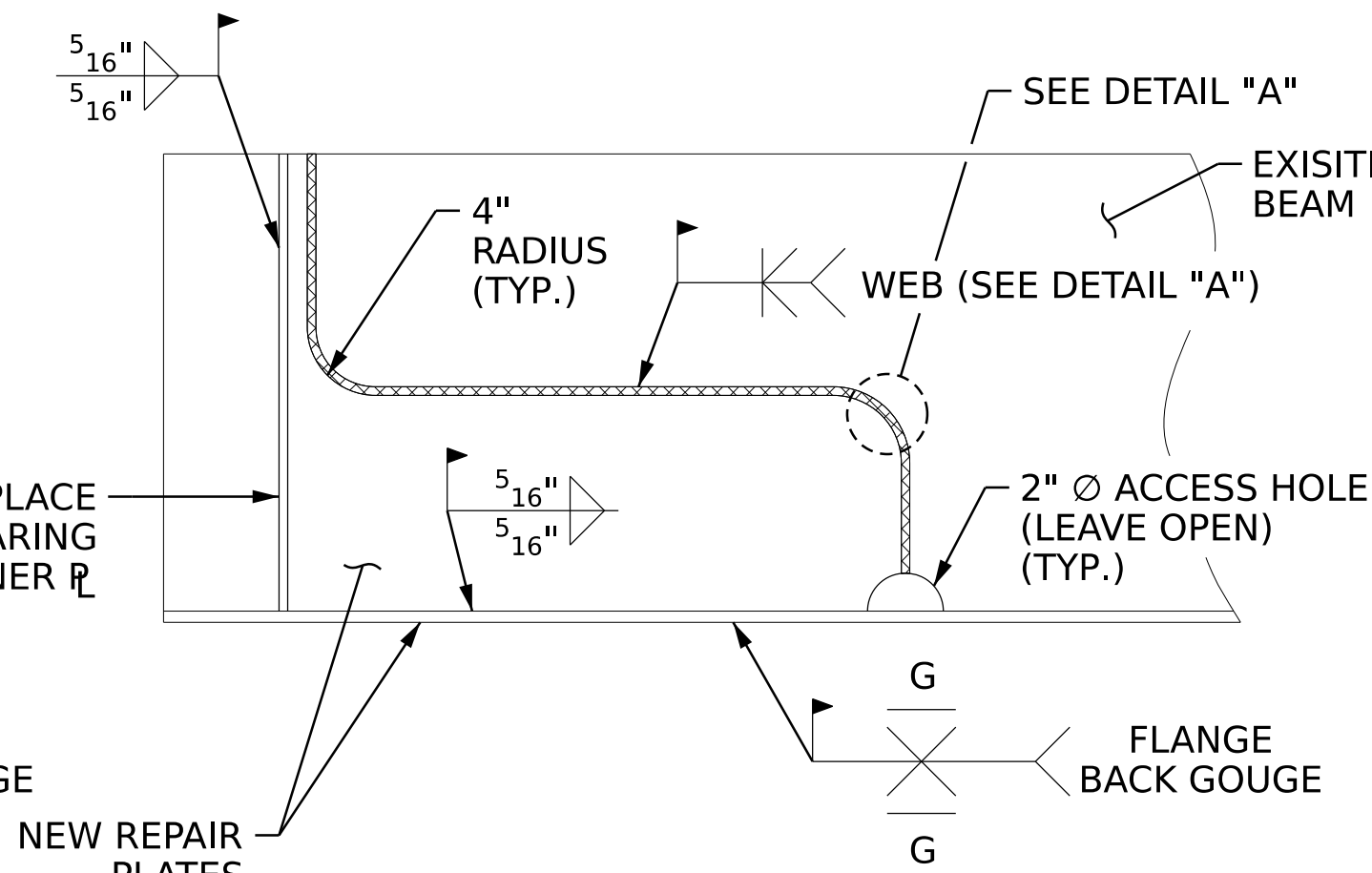


STIFFENER / CONNECTION REPAIR SECTION



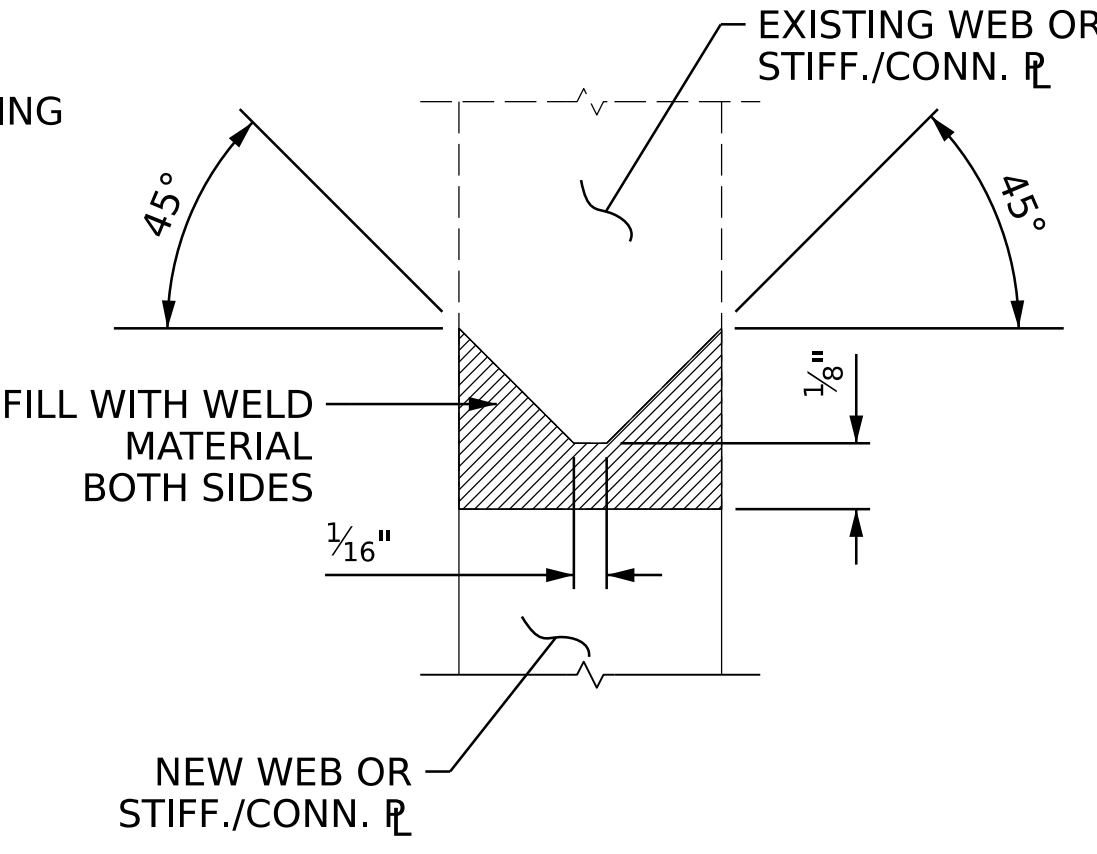
SECTION REPAIR

(NON-FULL HEIGHT REPAIR)



SECTION REPAIR

(PARTIAL-LENGTH, FULL HEIGHT REPAIR)



DETAIL A

NOTES:

AFTER THE STRUCTURAL STEEL HAS BEEN BLASTED AND PRIMED, THE STRUCTURAL STEEL AND BEARING SHALL BE INSPECTED FOR EXCESS SECTION LOSS. AREAS THAT EXHIBIT IN EXCESS OF 25% SECTION LOSS SHALL BE REVIEWED BY THE ENGINEER TO DETERMINE IF AREA OF SECTION LOSS SHOULD BE REPAIRED.

AS DETERMINED BY THE ENGINEER, AREAS WITH EXCESSIVE SECTION LOSS OR AREAS WITH TEMPORARY REPAIRS SHALL BE REMOVED AND THE BEAMS SHALL BE REPAIRED AS INDICATED ON THIS PLAN SHEET. CONTRACTOR AND ENGINEER TO DETERMINE ACTUAL DIMENSIONS OF AREA TO BE REMOVED AND REPLACED. REMOVE CONCRETE BENT DIAPHRAGMS AS NEEDED TO EVALUATE LIMITS OF REPAIR. REPLACE CONCRETE DIAPHRAGMS AT THE COMPLETION OF STEEL BEAM REPAIRS.

AREAS OF EXCESSIVE SECTION LOSS, IN ADDITION TO THOSE INDICATED ON PLAN SHEETS, MIGHT BE ENCOUNTERED. THE CONTRACTOR SHALL HAVE ADDITIONAL REPAIR MATERIALS ON HAND OR READILY AVAILABLE, SO ADDITIONAL AREAS OF EXCESSIVE SECTION LOSS MAY BE REPAIRED IN A TIMELY MANNER.

PAYMENT FOR SECTION REPAIR SHALL BE BASED ON THAT AMOUNT OF REPAIR ACTUALLY PERFORMED BY THE CONTRACTOR, AND APPROVED BY THE ENGINEER.

PROVIDE RUN-OFF WELD TABS, WHERE APPLICABLE, TO PROVIDE PROPER WELD START AND TERMINATION. SEE NCDOT M&T FIELD WELD MANUAL AND AWS D1.5 SECTION 3.12.

GOUGES AND INDENTIONS FROM IMPACT ON BEAMS SHALL BE GROUND SMOOTH PRIOR TO BLASTING AND PAINTING OPERATION.

FOR BEAM REPAIR CUT-OUT, SEE SPECIAL PROVISIONS.

STEEL DIAPHRAGM AND/OR STIFFENERS AND ASSOCIATED GUSSETTS SHALL BE TEMPORARILY REMOVED/DISCONNECTED, IF NECESSARY, AND REPLACED AFTER BEAM REPAIR.

IF BEAM DETERIORATION EXTENDS INTO THE CONCRETE BUILD-UP THEN CHIP AWAY CONCRETE TO DETERMINE THE EXTENT OF THE DAMAGE. CUT OUT BY APPROPRIATE MEANS THE DAMAGED BEAM AREA AND/OR BEARING STIFFENER.

MECHANICALLY CLEAN RUST, SCALE, AND EXISTING PAINT TO AT LEAST 3" BEYOND REPAIR AREA.

REPLACEMENT CUT-TO-FIT BEAM SECTION SHALL BE NEW AND FROM SIMILAR SIZE ROLLED BEAM OR APPROVED EQUIVALENT PLATES AND SHALL BE OF THE SAME MATERIAL AND GRADE OF THE EXISTING STEEL MEMBER OR BETTER.

INSTALL THE CUT-TO-FIT SECTION, FULLY WELD ALONG TOP AND SIDE OF PLATE USING FULL PENETRATION WELDS.

IN ACCORDANCE WITH THE PROJECT SPECIAL PROVISIONS, AFTER REPAIR, GRIND ALL FULL PENETRATION WELDS FLUSH, THOROUGHLY CLEAN AREA TO REMOVE DEBRIS AND OILS FROM REPAIR PROCESS.

CLEANING AND PAINTING OF REPAIRED STRUCTURAL STEEL SHALL BE PERFORMED AS PART OF THE OVERALL CLEANING AND PAINTING PAY ITEM.

FOR PAINTING EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

AFTER BEAMS ARE REPAIRED AND PAINTED, ANY CONCRETE REMOVED FROM THE BUILD-UP OR DIAPHRAGMS, SHALL BE CAST BACK. ANY REINFORCING STEEL CUT DURING THE REMOVAL PROCESS SHALL BE SPLICED WITH A SIMILAR SIZE BAR WITH AT LEAST A FOOT SPLICE TO THE EXISTING STEEL. NO SEPARATE PAYMENT SHALL BE MADE FOR CONCRETE AND REINFORCEMENT STEEL AS THIS IS CONSIDERED INCIDENTAL TO THE PAY ITEM "BEAM REPAIR CUT-OUT".

FOR LOCATIONS OF BEAM AND BEARING STIFFENER REPAIRS, SEE SUPERSTRUCTURE REPAIRS SHEET 1.

FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

CONTRACTOR RESPONSIBLE FOR VERIFYING LOCATIONS OF CUT LINES FOR STIFFENER PLATE REPAIR TO ENSURE PROPER FIT WITH EXISTING CROSS BRACING CONNECTIONS.

PROJECT NO. **15BPR.149.3**

WILKES COUNTY

BRIDGE NO. **960068**

SHEET 2 OF 2

Signed by:
Jacob Duke
20530C0054E9409
10/8/2025



KCA
KISINGER CAMPO
& ASSOCIATES

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**BEAM REPAIR CUT-OUT
SUPERSTRUCTURE
REPAIRS
SPANS 1-3**

DRAWN BY : **ALLEN J. MCSWAIN** DATE : **10/2024**
CHECKED BY : **FIDEL L. FLORES** DATE : **10/2024**
DESIGN ENGINEER: **JACOB H. DUKE** DATE : **10/2024**

10/8/2025
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BEAM REPAIR LOCATIONS

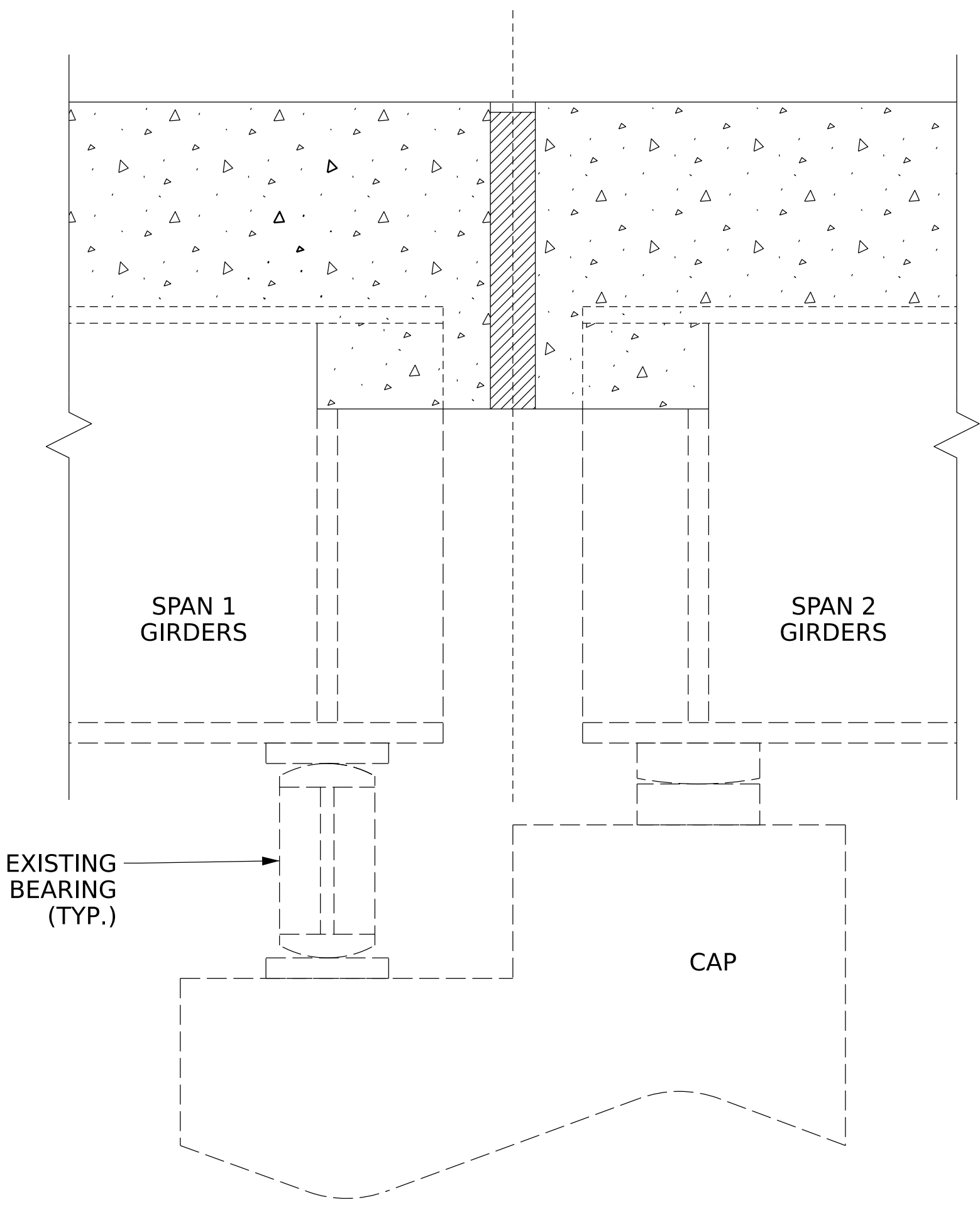
		DIM.			
SPAN	BEAM	LOCATION	A	B	C
1	1	BENT 1	0'-6"	2'-0"	-
1	2	BENT 1	0'-6"	2'-0"	-
1	3	BENT 1	0'-8"	2'-0"	-
1	4	BENT 1	0'-6"	2'-0"	-
1	4	EB1, 2ND STIFFENER	-	-	-
2	1	BENT 1	1'-0"	1'-0"	-
2	2	BENT 1	0'-4"	1'-2"	-
2	3	BENT 1	0'-6"	1'-0"	-
2	4	BENT 1	0'-6"	1'-0"	-
2	1	BENT 2	0'-6"	1'-0"	-
2	2	BENT 2	0'-6"	1'-2"	-
2	3	BENT 2	1'-4"	2'-0"	-
2	4	BENT 2	0'-4"	1'-2"	-
3	1	BENT 2	0'-8"	1'-0"	-
3	3	BENT 2	0'-4"	1'-0"	-

*STIFFENER REPLACEMENT ONLY AT THIS LOCATION

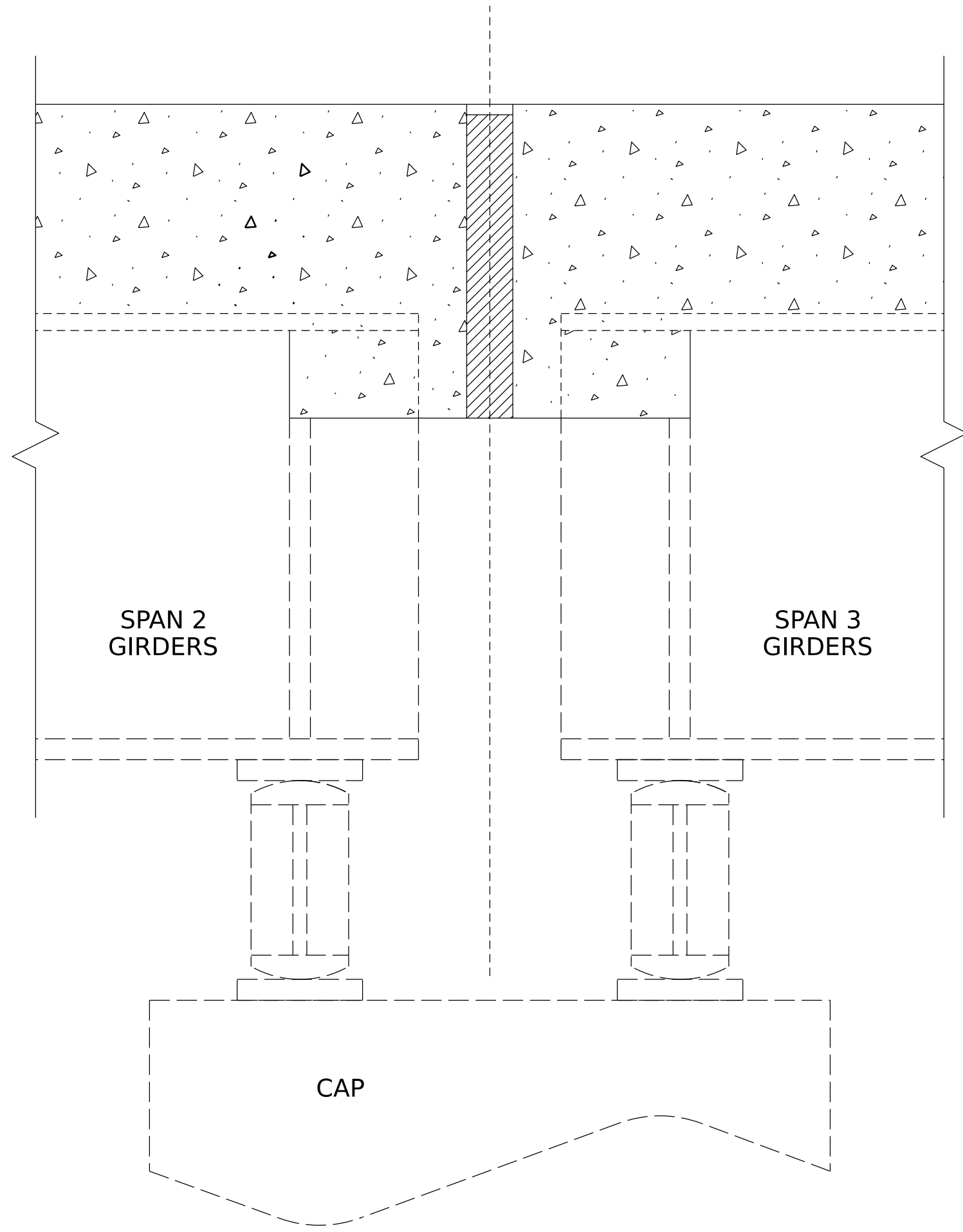
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NC FIRM LICENSE: C-1506

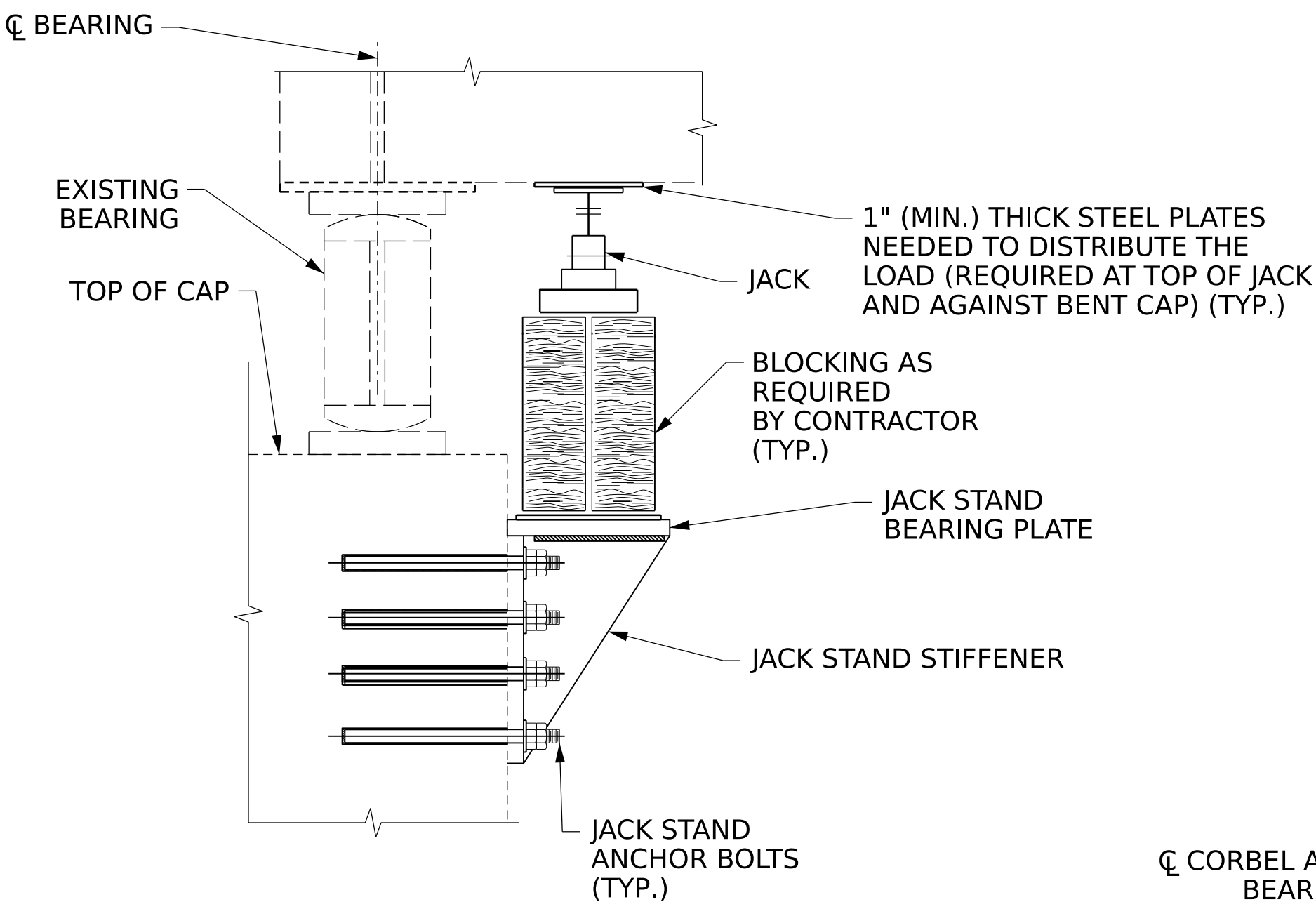
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-13
2			4			22



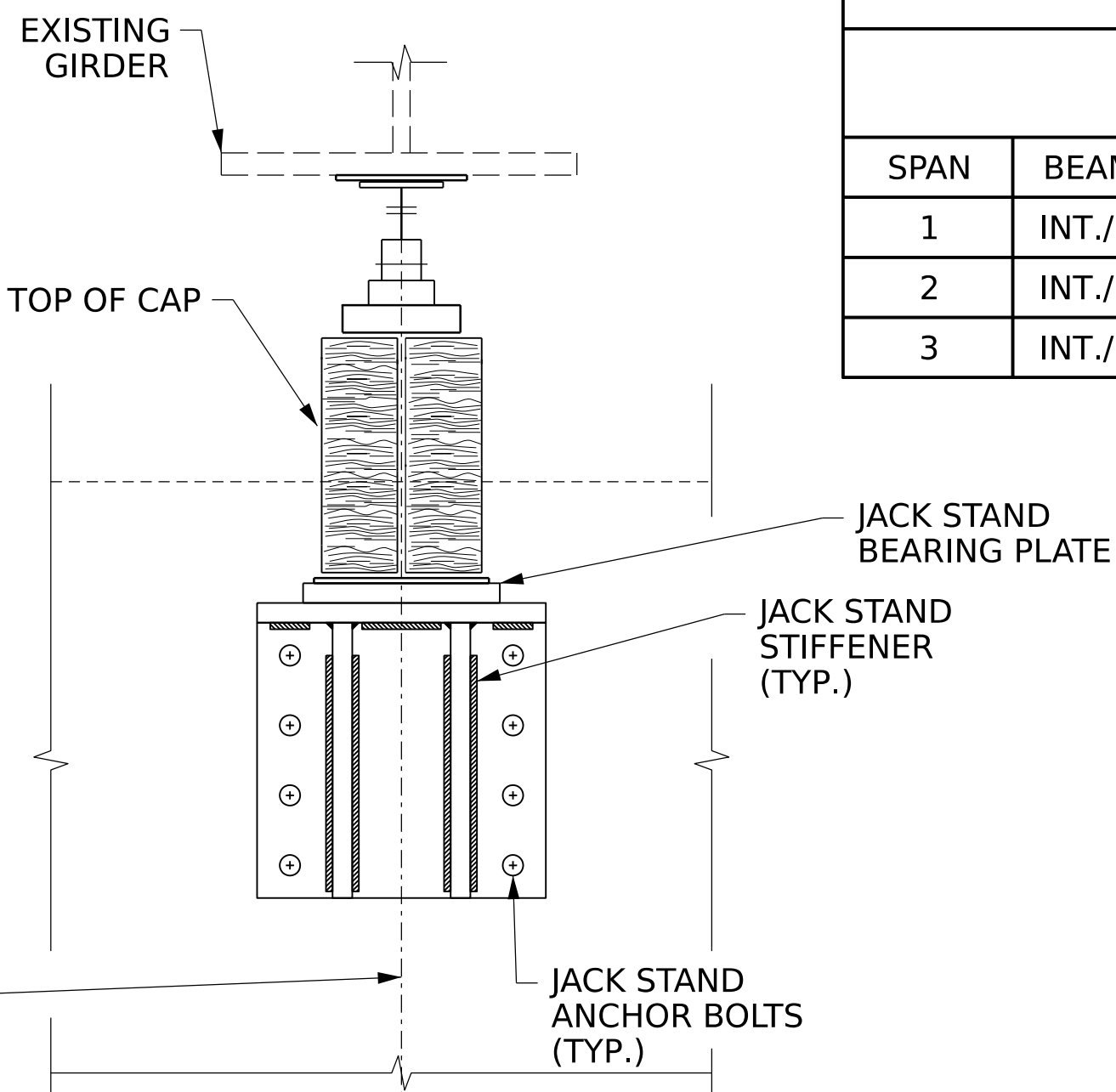
BENT 1
SECTION THRU CROSS BRACE



BENT 2
SECTION THRU CROSS BRACE



CORBEL JACK DETAIL



CORBEL JACK ELEVATION VIEW

NOTES:

THIS DETAIL IS A GENERIC EXAMPLE OF A JACKING SCHEME AND DOES NOT NECESSARILY REPRESENT SPECIFIC CONDITIONS AT A PARTICULAR BRIDGE. ACTUAL BRIDGE GEOMETRIES, DIMENSIONS, AND CONDITIONS MAY DIFFER FROM THIS DETAIL. PRIOR TO BEGINNING WORK, THE CONTRACTOR SHALL INVESTIGATE THE BRIDGES ON THE PROJECT AND DEVELOP A JACKING PLAN TO BE SUBMITTED FOR REVIEW AND APPROVAL. SEE BRIDGE JACKING SPECIAL PROVISION.

PRIOR TO BRIDGE JACKING OPERATIONS, THE ENGINEER AND CONTRACTOR SHALL INSPECT THE STRUCTURE FOR ANY NOTABLE DEFECTS TO THE PRIMARY AND SECONDARY STRUCTURAL MEMBERS. ALL NOTABLE DEFECTS SHALL BE DOCUMENTED AND REPORTED TO THE AREA BRIDGE MAINTENANCE ENGINEER PRIOR TO COMMENCEMENT OF ANY BRIDGE JACKING. THE CONTRACTOR SHALL PROVIDE SAFE AND SUFFICIENT ACCESS TO ALL STRUCTURAL MEMBERS FOR THE ENGINEER TO ESTABLISH PROPER DOCUMENTATION.

PRIOR TO JACKING, THE CONTRACTOR SHALL ENSURE THERE ARE NO OBSTACLES PREVENTING THE BEAM FROM BEING LIFTED.

THE BEAM SHALL BE LIFTED ENOUGH THAT THE BEAM CLEARS THE BEARINGS AND ALL LOAD IS SUPPORTED BY THE JACKS. AFTER JACKING IS COMPLETE, THE CONTRACTOR SHALL PROVIDE FOR A METHOD TO REMOVE THE JACKS AND SUPPORT THE BEAM FOR DEAD AND LIVE LOAD DURING THE REPAIR OPERATIONS. IF THE JACKS REMAIN IN PLACE DURING THE ENTIRE JACKING AND REPAIR OPERATION, THEY SHALL HAVE MECHANICAL LOCK OFF CAPABILITIES.

IF, DURING THE JACKING PROCESS, OR WHILE THE BEAM IS BEING SUPPORTED, THE BEAM SHIFTS FROM ITS ORIGINAL POSITION, ALL WORK SHALL CEASE AND THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY.

BEARINGS ADJACENT TO THE BEAM BEING JACKED MAY BE LOOSENEED TO DECREASE THE RESISTANCE OF THE DECK SLAB DURING JACKING. ALL BEARINGS LOOSENEED SHALL BE TIGHTENED BACK AFTER REPAIR OPERATIONS ARE COMPLETED AND THE JACKS AND BLOCKING HAVE BEEN REMOVED.

THE MAXIMUM DIFFERENTIAL BETWEEN ADJACENT BEAMS THAT ARE BEING JACKED IS 1/8".

LOADS PROVIDED IN THE "BRIDGE JACKING TABLE" ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR'S ENGINEER SHALL DETERMINE THE EXPECTED LOADS TO BE LIFTED DURING THE BRIDGE JACKING OPERATIONS.

THE CONTRACTOR SHALL SUBMIT WORKING DRAWINGS AND CALCULATIONS OF THE JACKING PROCEDURE(S) SEALED BY A PROFESSIONAL ENGINEER IN THE STATE OF NORTH CAROLINA TO THE ENGINEER FOR APPROVAL PRIOR TO BRIDGE JACKING OPERATIONS.

FOR TYPE I BRIDGE JACKING, SEE SPECIAL PROVISIONS.

FOR WORKING DRAWING SUBMITTALS, SEE SPECIAL PROVISIONS.

ANY STEEL THAT HAS BEEN WELDED TO THE EXISTING STRUCTURE SHALL REMAIN IN PLACE.

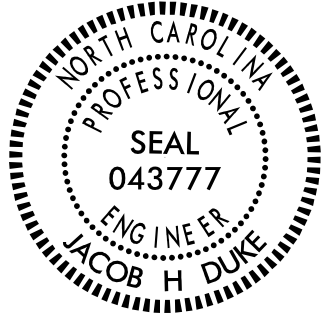
THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE CAUSED TO THE EXISTING STRUCTURE BY BRIDGE JACKING OPERATIONS AT NO ADDITIONAL COST TO THE DEPARTMENT.

NO GIRDER SHALL BE JACKED AT EITHER END BENT.

BRIDGE JACKING TABLE			
BRIDGE NO. 960068			
SPAN	BEAM(S)	BRIDGE JACKING TYPE	DEAD LOAD (DC+DW) (KIPS)
1	INT./EXT.	TYPE 1	140
2	INT./EXT.	TYPE 1	140
3	INT./EXT.	TYPE 1	140

PROJECT NO. 15BPR.149.3
WILKES COUNTY
BRIDGE NO. 960068

Signed by:
Jacob Duke
20530C0054E94D9
10/8/2025



KCA
KISINGER CAMPO
& ASSOCIATES

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE JACKING
DETAILS
JACK STAND DETAILS

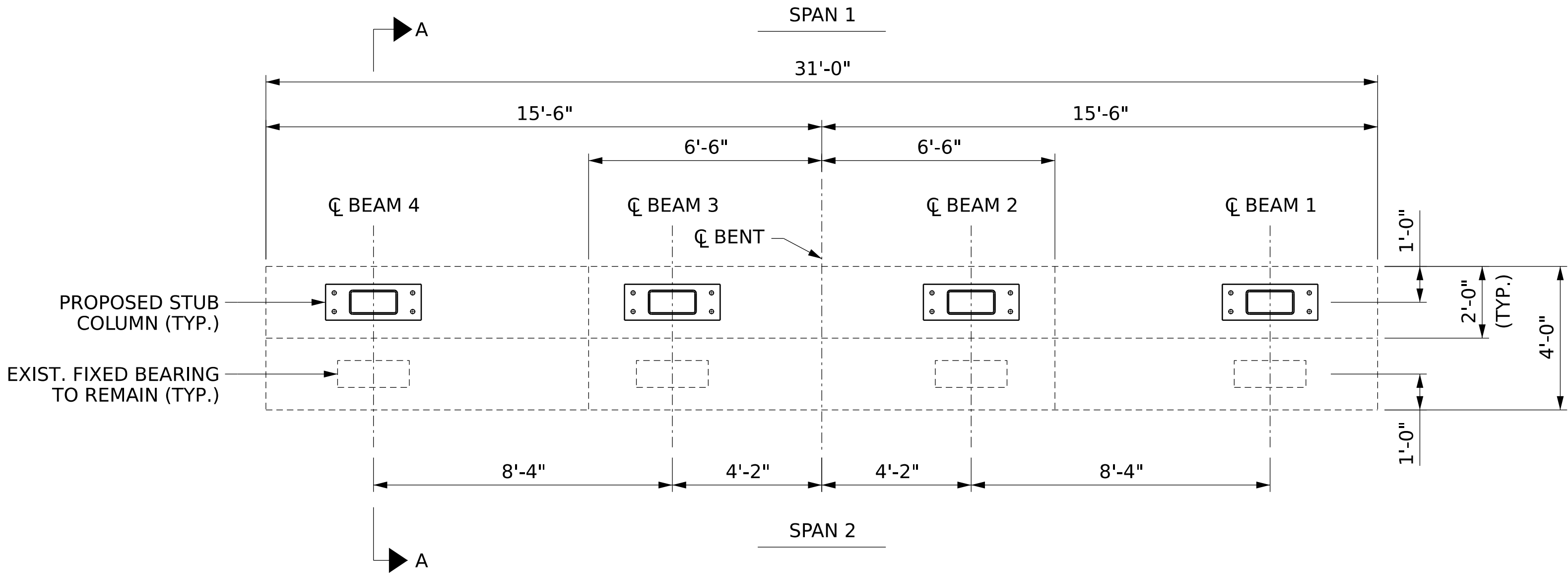
DRAWN BY : ALLEN J. MCSWAIN DATE : 10/2024
CHECKED BY : FIDEL L. FLORES DATE : 10/2024
DESIGN ENGINEER: JACOB H. DUKE DATE : 10/2024

10/8/2025
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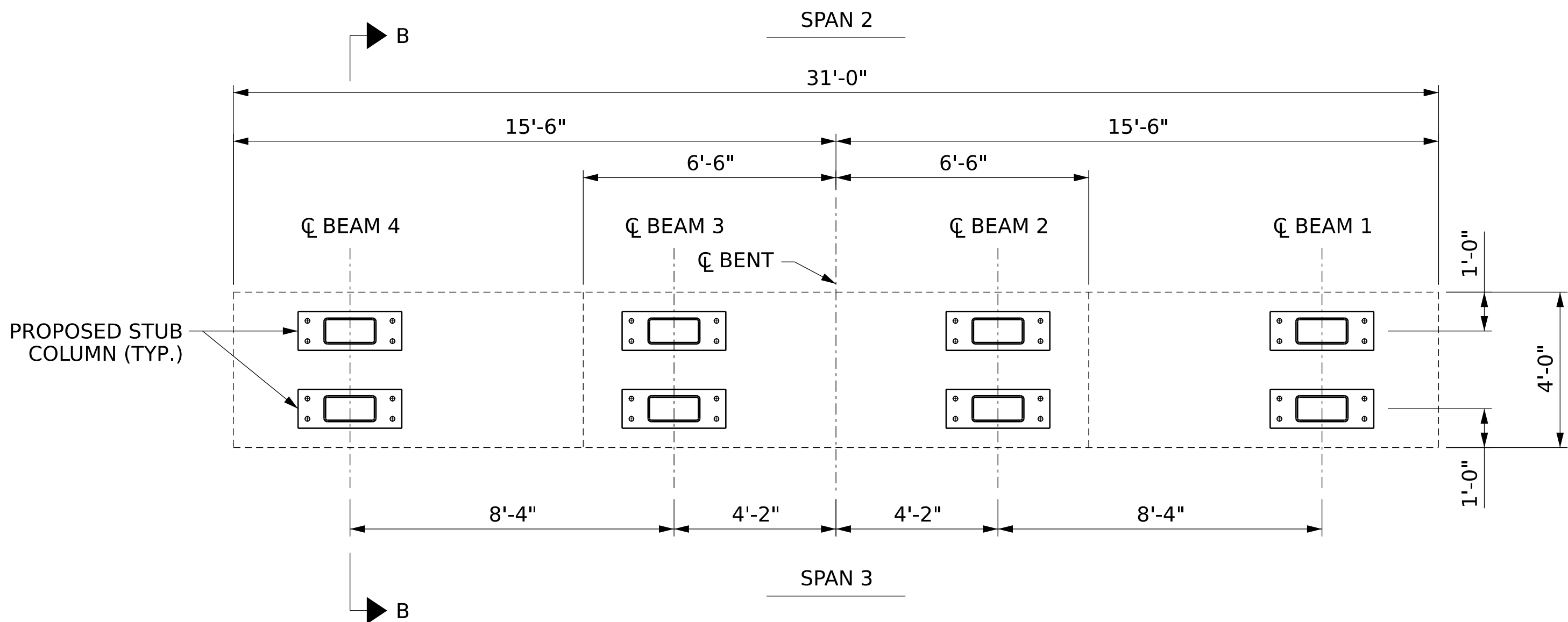
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NC FIRM LICENSE: C-1506

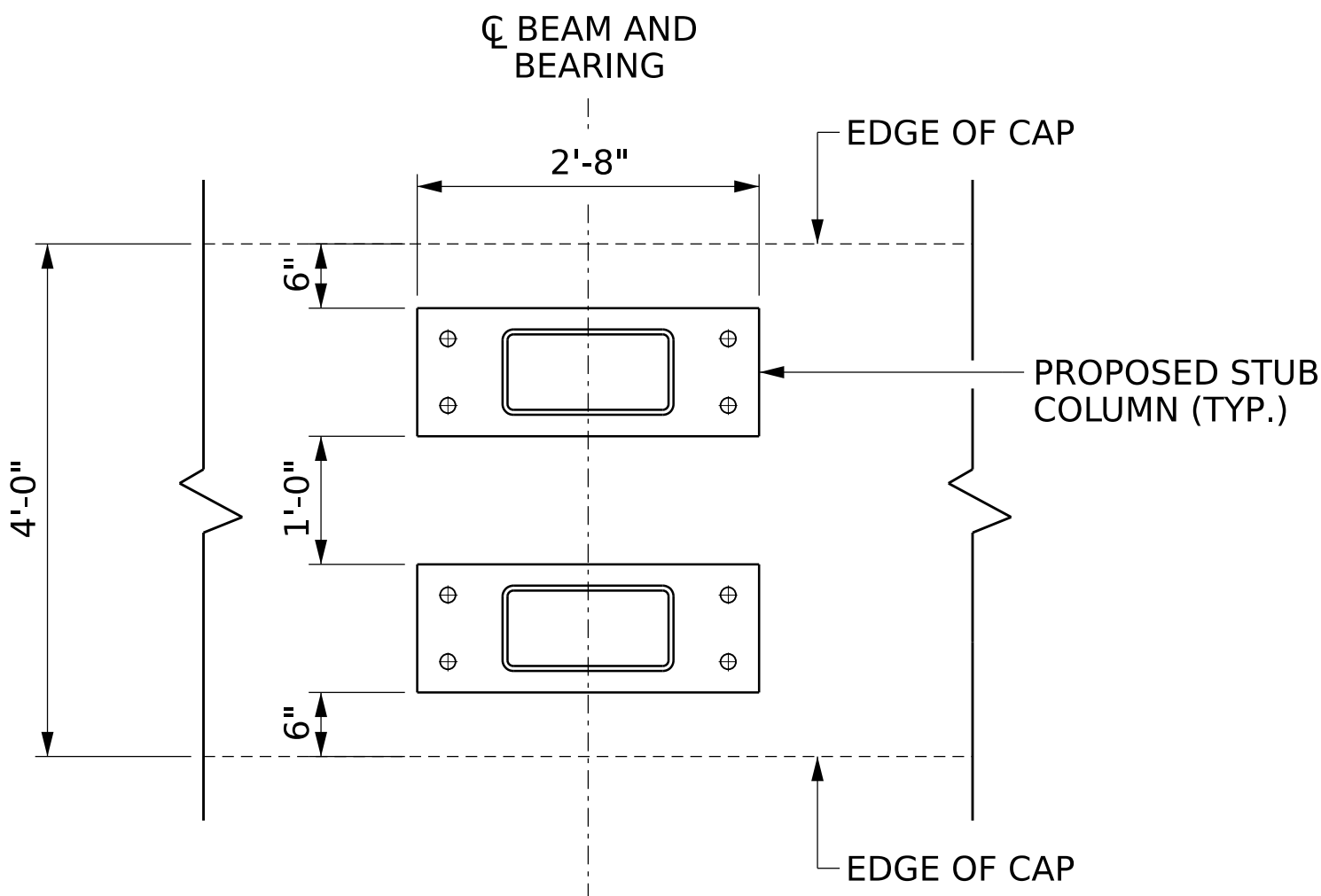
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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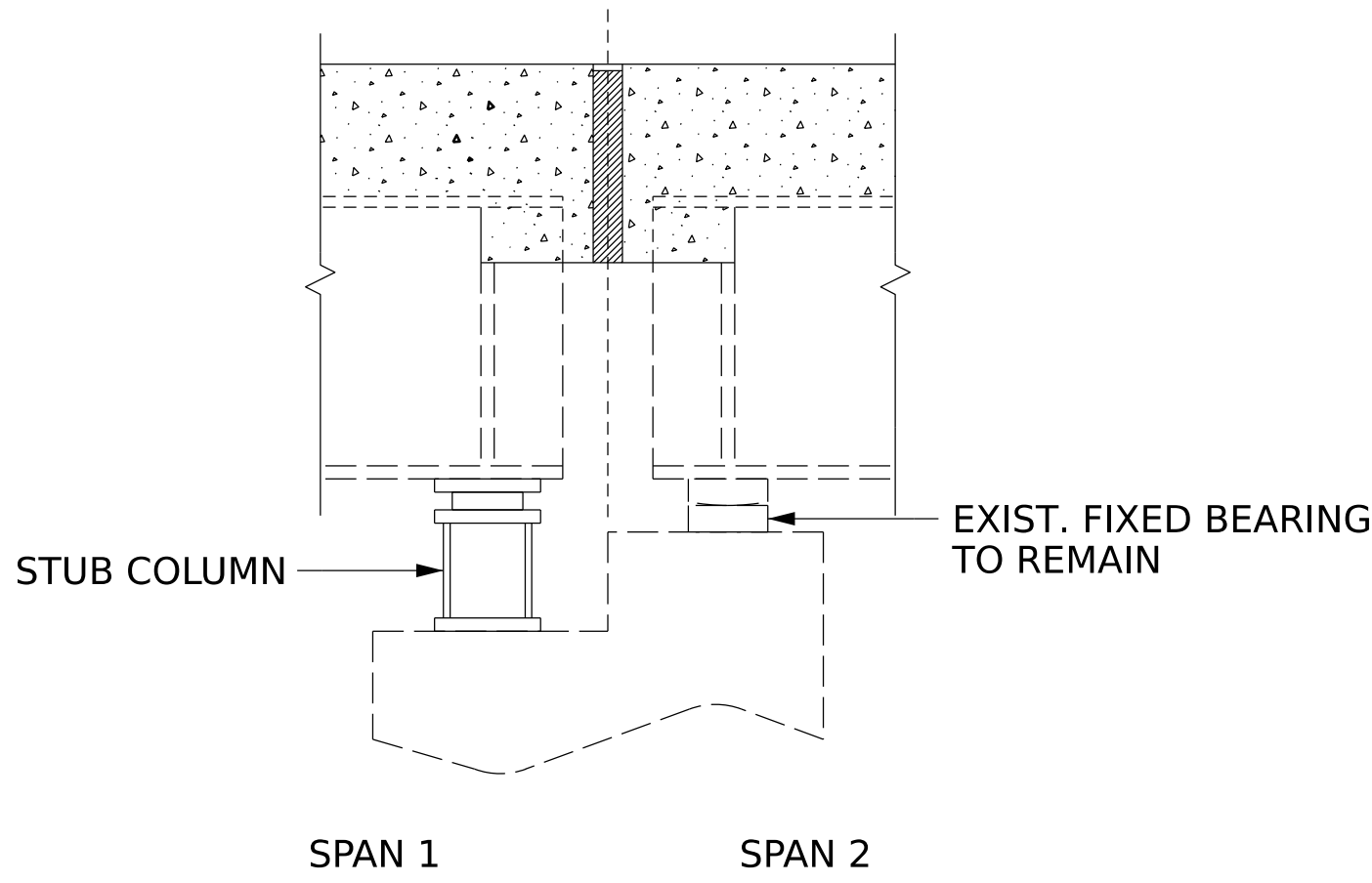
PLAN OF CAP - BENT 1



PLAN OF CAP - BENT 2

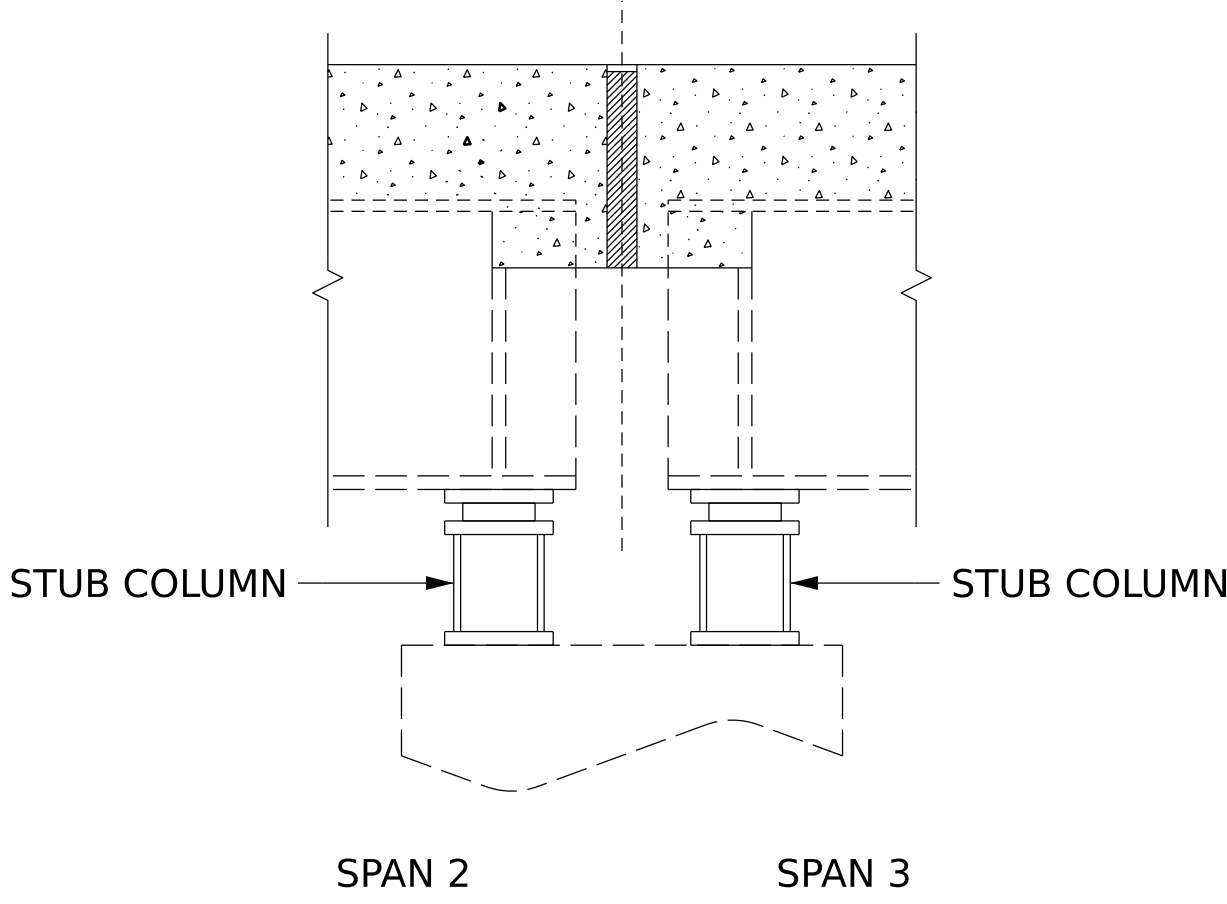


DETAIL OF BOTTOM PLATE ORIENTATION



SECTION A-A

(BENT 1)



SECTION B-B

(BENT 2)

Signed by:
Jacob Duke
2053100054E9409
10/8/2025



PROJECT NO. 15BPR.149.3

WILKES COUNTY

BRIDGE NO. 960068

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BEARING REPLACEMENT
DETAILS

DRAWN BY : ALLEN J. MCSWAIN DATE : 10/2024
CHECKED BY : FIDEL L. FLORES DATE : 10/2024
DESIGN ENGINEER: JACOB H. DUKE DATE : 10/2024

10/8/2025
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1			3			TOTAL SHEETS
2			4			22

NOTES:

PROVIDE STEEL REINFORCED ELASTOMERIC BEARING AT BEARING REPLACEMENT LOCATIONS INDICATED ON THE PLANS AND IN ACCORDANCE WITH THE DETAILS AND NOTES INDICATED.

THE 2" Ø PIPE SLEEVE SHALL BE CUT FROM SCHEDULE 40 PVC PLASTIC PIPE. THE PVC PLASTIC PIPE SHALL MEET THE REQUIREMENTS OF ASTM D1785.

THE PAYMENT FOR THE PIPE SLEEVES SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS FOR THIS PROJECT.

SOLE PLATES SHALL BE AASHTO M270 GRADE 50 AND SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL STRUCTURAL STEEL HARDWARE SHALL MEET THE REQUIREMENTS AND BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SUBARTICLE 1072-5.

WHEN FIELD WELDING THE SOLE PLATE TO THE GIRDER FLANGE, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

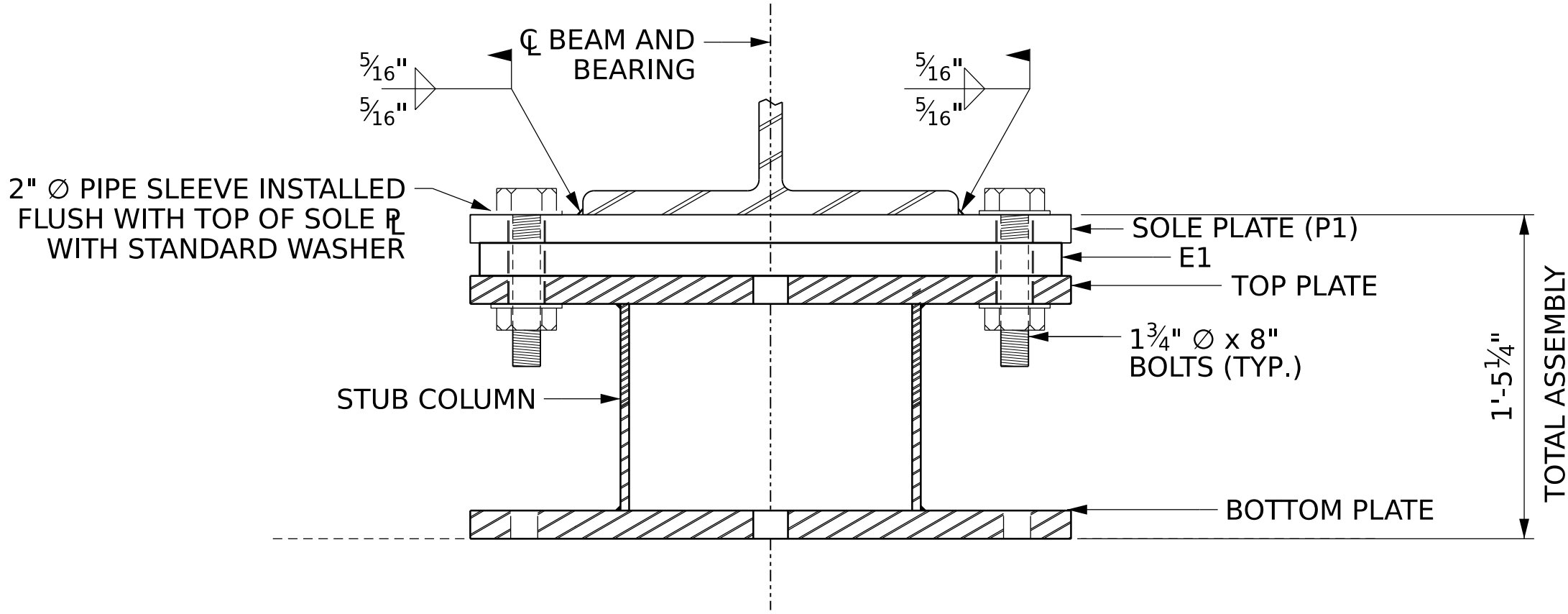
ALL GALVANIZED SURFACES DAMAGED DURING INSTALLATION OF ELASTOMERIC BEARINGS AND SOLE PLATES AND DURING CONSTRUCTION SHALL BE REPAIED AS REQUIRED IN SUBARTICLE 1076-7 OF THE STANDARD SPECIFICATIONS.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

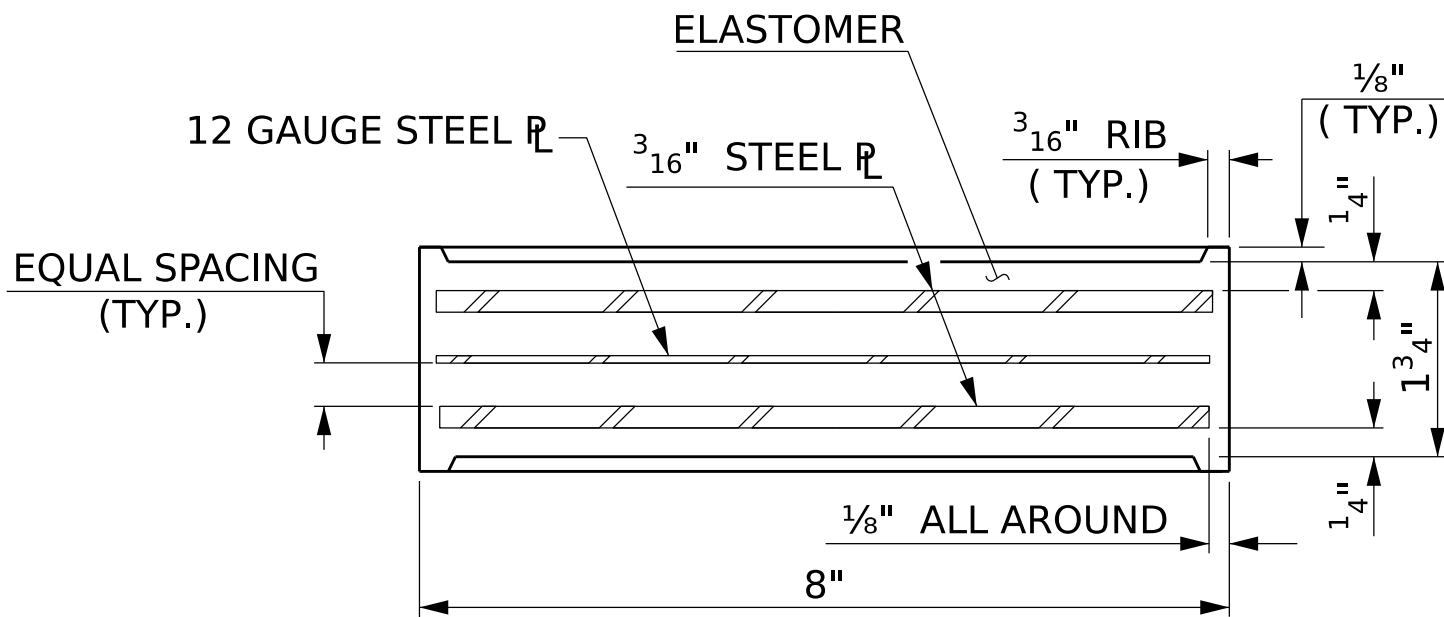
FOR ELASTOMERIC BEARINGS, SEE SPECIAL PROVISION.

SOLE PLATE, BOLTS, NUTS, AND WASHERS SHALL BE INCLUDED IN THE PAY ITEM FOR STEEL REINFORCED ELASTOMERIC BEARINGS.

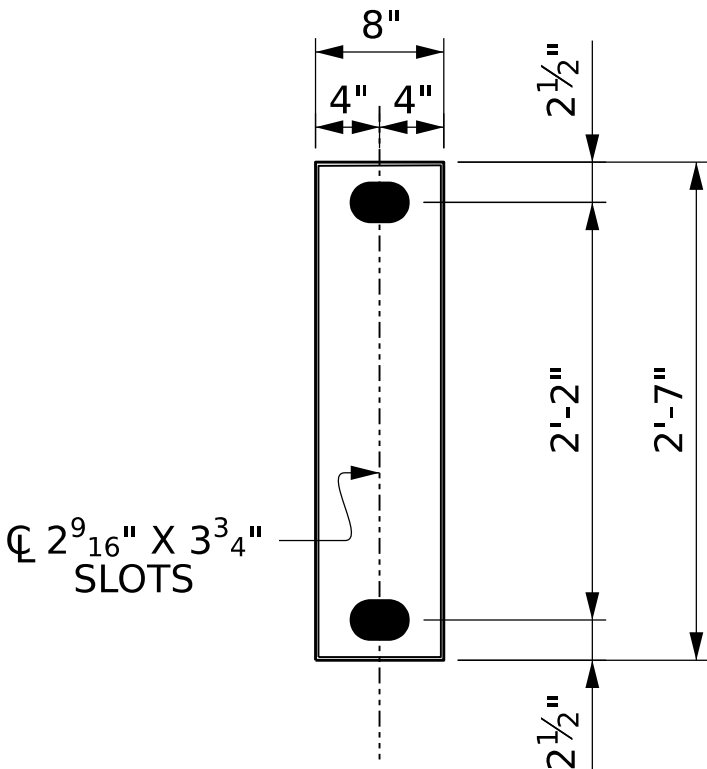


EXPANSION

END VIEW



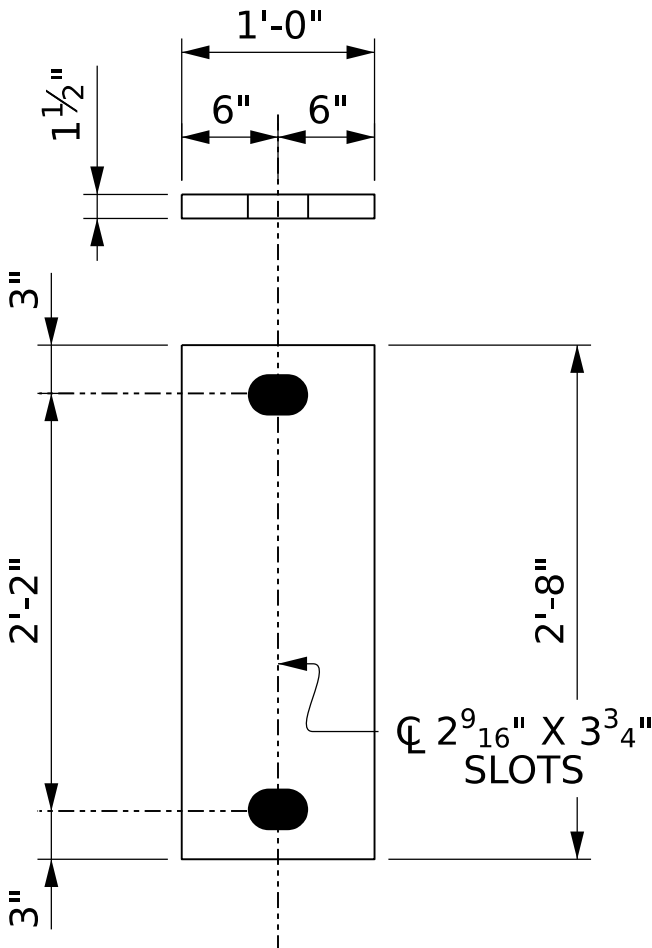
TYPICAL SECTION OF ELASTOMERIC BEARINGS



E1 (12 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE I



P1

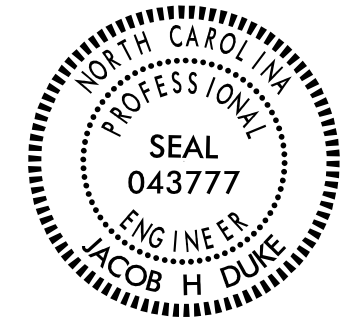
(EXPANSION)

P1 (12 REQ'D)

TOP SOLE PLATE

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE I	245 k

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PROJECT NO. 15BPR.149.3

WILKES COUNTY

BRIDGE NO. 960068

SHEET 3 OF 3

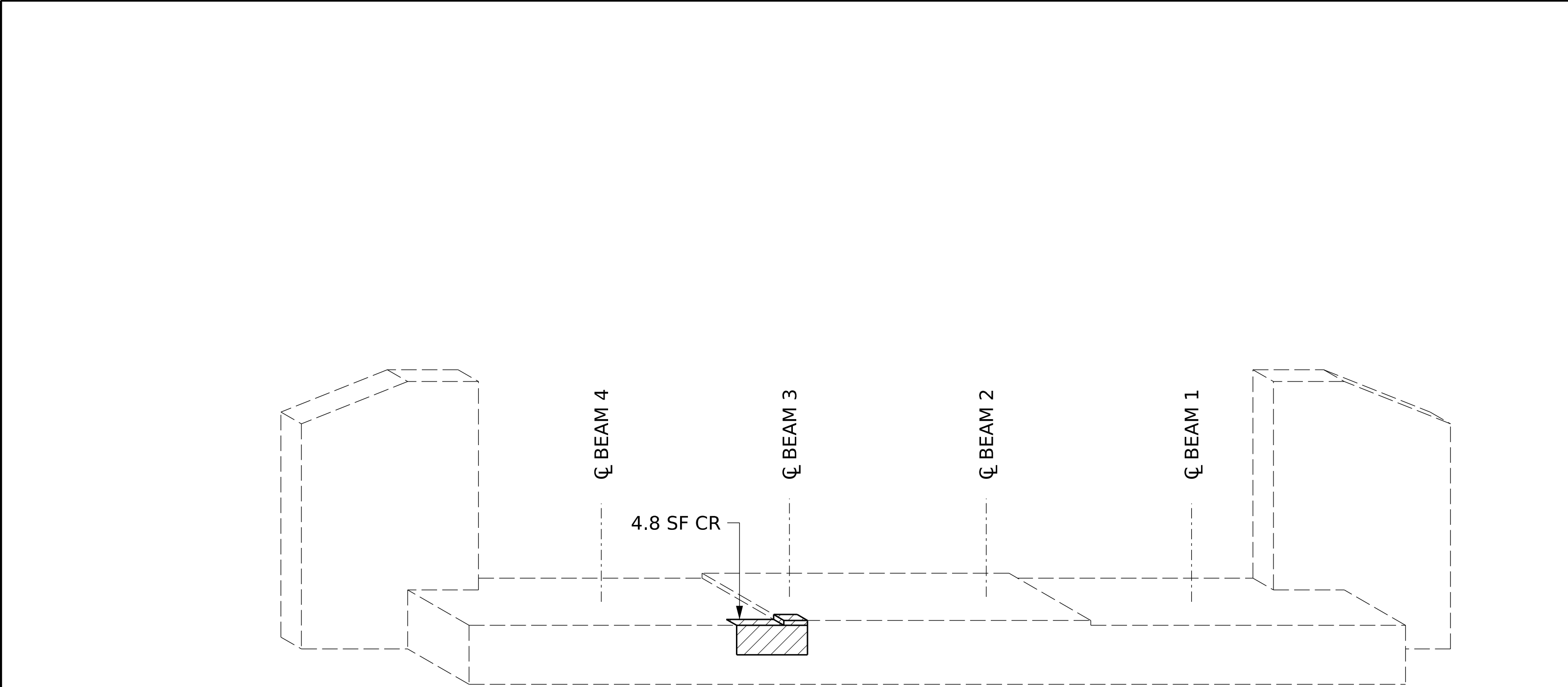
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BEARING REPLACEMENT
DETAILS

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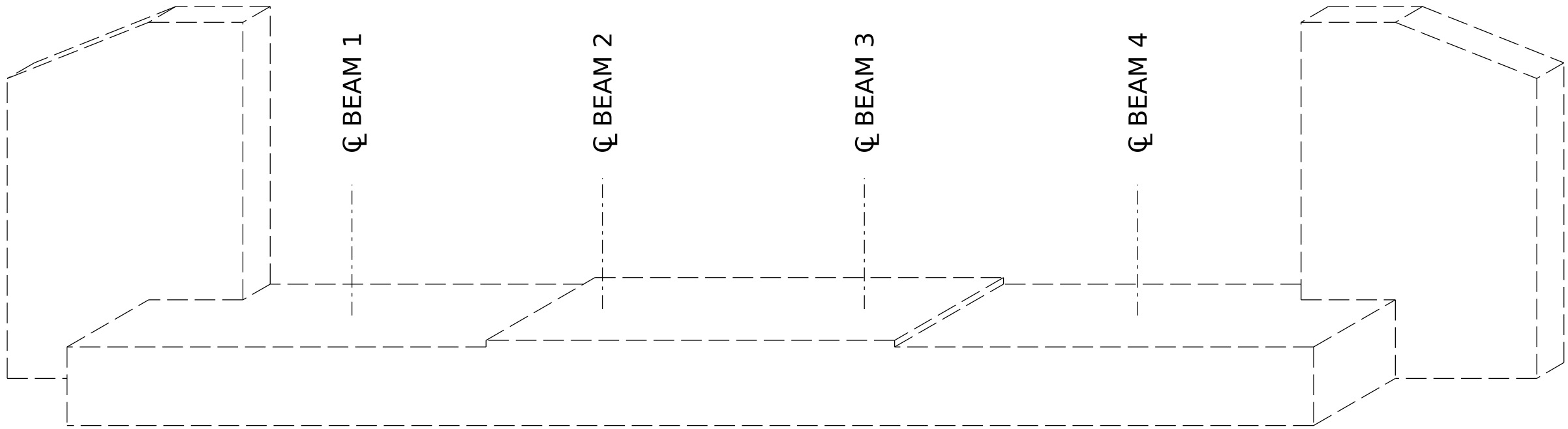
DRAWN BY :	ALLEN J. MCSWAIN	DATE :	10/2024
CHECKED BY :	FIDEL L. FLORES	DATE :	10/2024
DESIGN ENGINEER:	JACOB H. DUKE	DATE :	10/2024

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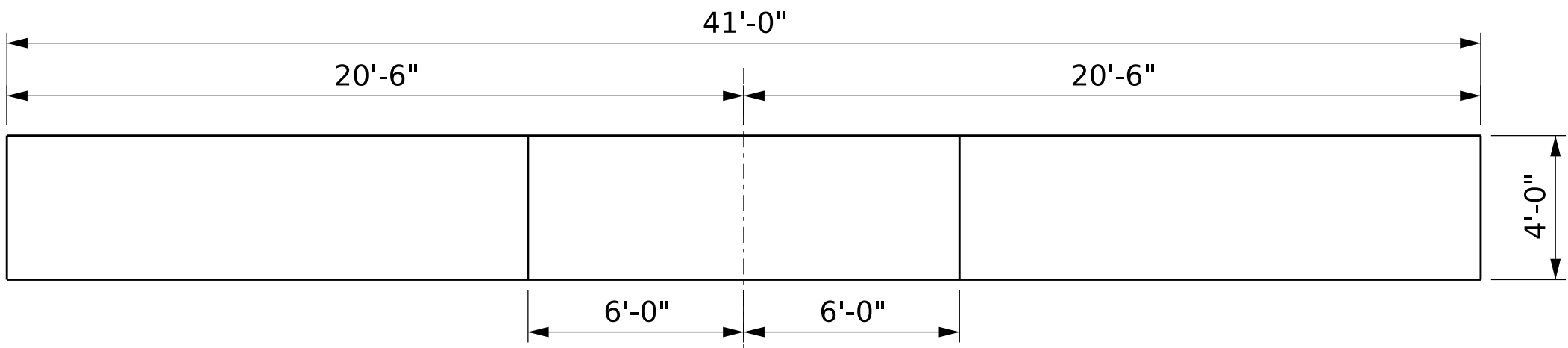
END BENT 1

(LOOKING WEST)



END BENT 2

(LOOKING EAST)



END BENT 1

(LOOKING EAST)
(END BENT 2 SIMILAR BY ROTATION)

LEGEND	
	CONCRETE REPAIR AREA (CR)
	SHOTCRETE REPAIR AREA (SCR)
	EPOXY RESIN INJECTION (ERI)

AS-BUILT REPAIR QUANTITY TABLE				
		QUANTITY		
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
	CAP / BACKWALL			
COLUMN / PILE				
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
	CAP	4.8	2.4	
COLUMN / PILE				
EPOXY RESIN INJECTION		EST. LIN. FT.		ACT. LIN. FT
CAP				
COLUMN / PILE				
EPOXY COAT CAPS		EST. AREA SQ. FT.		ACTUAL AREA SQ. FT.
CAP		328.0		

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE. MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT. FOR REPAIR DETAILS, SEE "CONCRETE RESTORATION DETAILS" SHEETS.

NOTES:

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE TABLE ABOVE.

CRACKING LOCATIONS AND QUANTITIES FOR LOCATIONS DESCRIBED AS "SCATTERED THROUGHOUT" IN THE INSPECTION REPORT ARE BASED ON THE BEST INFORMATION AVAILABLE. THE ENGINEER AND CONTRACTOR SHALL IDENTIFY AND REPAIR ALL CRACKS $\geq \frac{1}{16}$ " AT EACH BENT AND END BENT AS DESCRIBED IN THE SPECIAL PROVISIONS.

AVERAGE CONCRETE COVER IS EXPECTED TO BE 2" ON THE CAP AND FROM $1\frac{1}{2}$ " TO 2" ON THE COLUMNS. ACTUAL CONCRETE COVER SHALL BE DETERMINED BY THE CONTRACTOR AND PRESENTED TO THE ENGINEER PRIOR TO BEGINNING EXCAVATION/ DEMOLITION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE "CONCRETE RESTORATION DETAILS" SHEETS.

SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

PERFORM ALL CONCRETE REPAIRS PRIOR TO APPLYING THE EPOXY COATING.

TOP OF CAPS SHOULD BE CLEAN AND CLEAR OF DEBRIS PRIOR TO THE APPLICATOIN OF THE EPOXY COATING.

COAT ALL THE FREE SURFACE AREA ON THE TOP OF THE CAPS, INCLUDING CHAMFERS, WITH EPOXY COATING. DO NOT COAT UNDER BEARING AREAS.

FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS. AND STANDARD SPECIFICATIONS SECTION 420-18.

PROJECT NO. 15BPR.149.3
WILKES COUNTY
BRIDGE NO. 960068

SHEET 1 OF 3

Signed by:
Jacob Duke
29530C9054E94D9.
10/8/2025

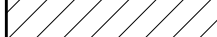
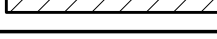


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE REPAIRS END BENTS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 22

DRAWN BY :	ALLEN J. MCSWAIN	DATE :	10/2024
CHECKED BY :	FIDEL L. FLORES	DATE :	10/2024
DESIGN ENGINEER:	JACOB H. DUKE	DATE :	10/2024

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301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

LEGEND	
	CONCRETE REPAIR AREA (CR)
	SHOTCRETE REPAIR AREA (SCR)
	EPOXY RESIN INJECTION (ERI)

AS-BUILT REPAIR QUANTITY TABLE				
	QUANTITY			
SHOTCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP / BACKWALL	38.6	19.3		
COLUMN / PILE	34.5	17.3		
STRUT	3.9	2.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP	28.1	14.1		
COLUMN / PILE				
EPOXY RESIN INJECTION	EST. LIN. FT.		ACT. LIN. FT	
CAP				
COLUMN / PILE				
EPOXY COAT CAPS	EST. AREA SQ. FT.		ACTUAL AREA SQ. FT.	
CAP	124.0			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE.
MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT. FOR REPAIR DETAILS,
SEE "CONCRETE RESTORATION DETAILS" SHEETS.

NOTES:

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE.
IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER,
THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF
THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE TABLE ABOVE.

CRACKING LOCATIONS AND QUANTITIES FOR LOCATIONS DESCRIBED AS "SCATTERED THROUGHOUT" IN THE INSPECTION REPORT ARE BASED ON THE BEST INFORMATION AVAILABLE. THE ENGINEER AND CONTRACTOR SHALL IDENTIFY AND REPAIR ALL CRACKS $\geq 1/16"$ AT EACH BENT AND END BENT AS DESCRIBED IN THE SPECIAL PROVISIONS.

AVERAGE CONCRETE COVER IS EXPECTED TO BE 2" ON THE CAP AND FROM 1½" TO 2" ON THE COLUMNS. ACTUAL CONCRETE COVER SHALL BE DETERMINED BY THE CONTRACTOR AND PRESENTED TO THE ENGINEER PRIOR TO BEGINNING EXCAVATION/ DEMOLITION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE "CONCRETE RESTORATION DETAILS" SHEETS.

SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

PERFORM ALL CONCRETE REPAIRS PRIOR TO APPLYING THE EPOXY COATING.

TOP OF CAPS SHOULD BE CLEAN AND CLEAR OF DEBRIS PRIOR TO THE APPLICATION OF THE EPOXY COATING.

COAT ALL THE FREE SURFACE AREA ON THE TOP OF THE CAPS, INCLUDING CHAMFERS, WITH EPOXY COATING. DO NOT COAT UNDER BEARING AREAS.

FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS. AND STANDARD SPECIFICATIONS SECTION 420-18.

REPAIRS TO THE CAPS MAY REQUIRE BRIDGE JACKING. FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.149.3
WILKES COUNTY

BRIDGE NO. 960068

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIRS

BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			22

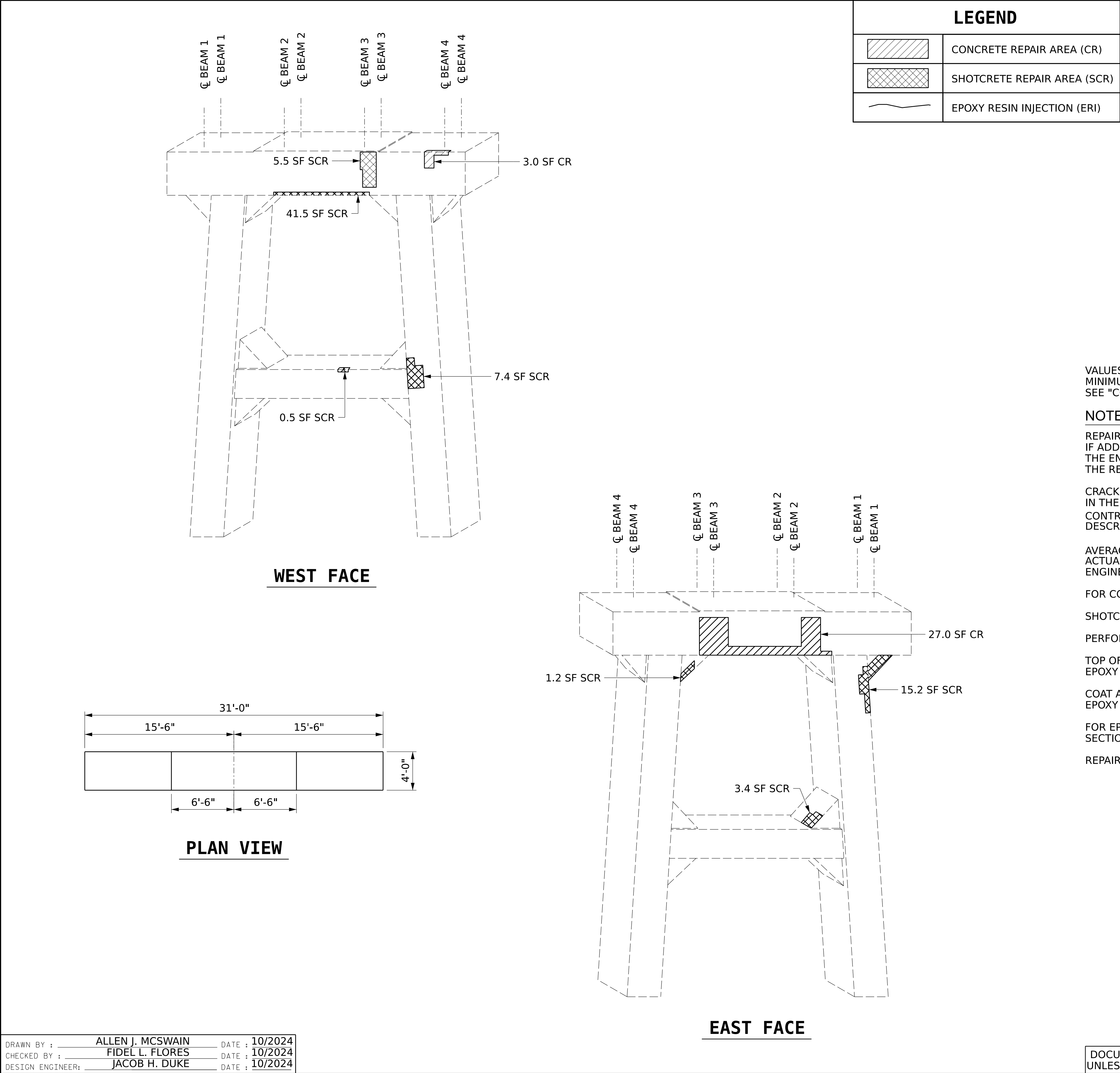
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Signed by:
Jacob Duke
29530C8054E94D9
0/8/2025



DRAWN BY : ALLEN J. MCSWAIN DATE : 10/2024
 CHECKED BY : FIDEL L. FLORES DATE : 10/2024
 DESIGN ENGINEER: JACOB H. DUKE DATE : 10/2024

10/8/2025
15BPR_SMU_SBR01.dgn
fflores



AS-BUILT REPAIR QUANTITY TABLE				
SHOTCRETE REPAIRS	QUANTITY			
	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
CAP / BACKWALL	47.0	23.5		
COLUMN / PILE	23.8	11.9		
STRUTT	3.9	2.0		
CONCRETE REPAIRS	AREA SQ. FT.	VOLUME CU. FT.	AREA SQ. FT.	VOLUME CU. FT.
	CAP	30.0	15.0	
COLUMN / PILE				
EPOXY RESIN INJECTION		EST. LIN. FT.	ACT. LIN. FT	
CAP				
COLUMN / PILE				
EPOXY COAT CAPS		EST. AREA SQ. FT.	ACTUAL AREA SQ. FT.	
CAP		124.0		

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE. MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT. FOR REPAIR DETAILS, SEE "CONCRETE RESTORATION DETAILS" SHEETS.

NOTES:

REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE TABLE ABOVE.

CRACKING LOCATIONS AND QUANTITIES FOR LOCATIONS DESCRIBED AS "SCATTERED THROUGHOUT" IN THE INSPECTION REPORT ARE BASED ON THE BEST INFORMATION AVAILABLE. THE ENGINEER AND CONTRACTOR SHALL IDENTIFY AND REPAIR ALL CRACKS $\geq \frac{1}{16}$ " AT EACH BENT AND END BENT AS DESCRIBED IN THE SPECIAL PROVISIONS.

AVERAGE CONCRETE COVER IS EXPECTED TO BE 2" ON THE CAP AND FROM $1\frac{1}{2}$ " TO 2" ON THE COLUMNS. ACTUAL CONCRETE COVER SHALL BE DETERMINED BY THE CONTRACTOR AND PRESENTED TO THE ENGINEER PRIOR TO BEGINNING EXCAVATION/ DEMOLITION.

FOR CONCRETE AND SHOTCRETE REPAIRS, SEE "CONCRETE RESTORATION DETAILS" SHEETS.

SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

PERFORM ALL CONCRETE REPAIRS PRIOR TO APPLYING THE EPOXY COATING.

TOP OF CAPS SHOULD BE CLEAN AND CLEAR OF DEBRIS PRIOR TO THE APPLICATOIN OF THE EPOXY COATING.

COAT ALL THE FREE SURFACE AREA ON THE TOP OF THE CAPS, INCLUDING CHAMFERS, WITH EPOXY COATING. DO NOT COAT UNDER BEARING AREAS.

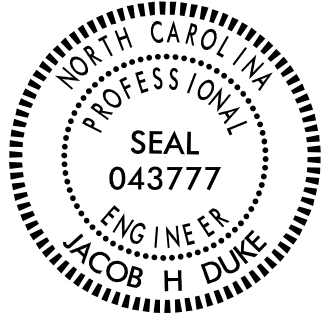
FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS. AND STANDARD SPECIFICATIONS SECTION 420-18.

REPAIRS TO THE CAPS MAY REQUIRE BRIDGE JACKING. FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.149.3
WILKES COUNTY
BRIDGE NO. 960068

SHEET 3 OF 3

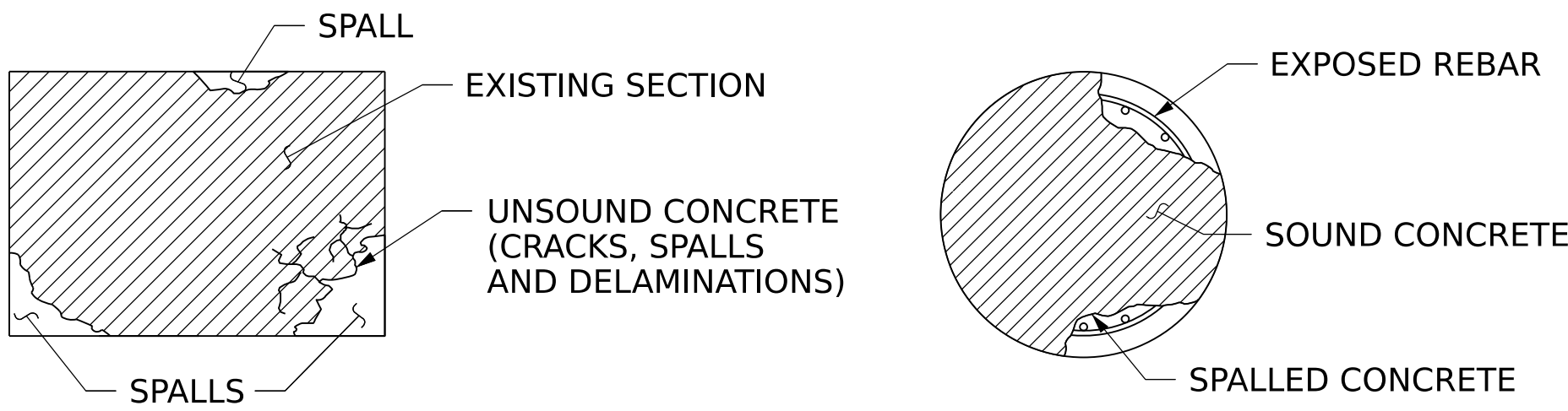
Signed by:
Jacob Duke
20530C9054E94D9
10/8/2025



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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2			4			

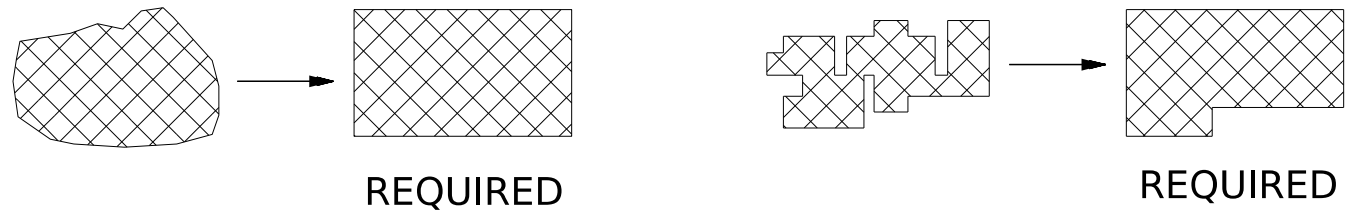
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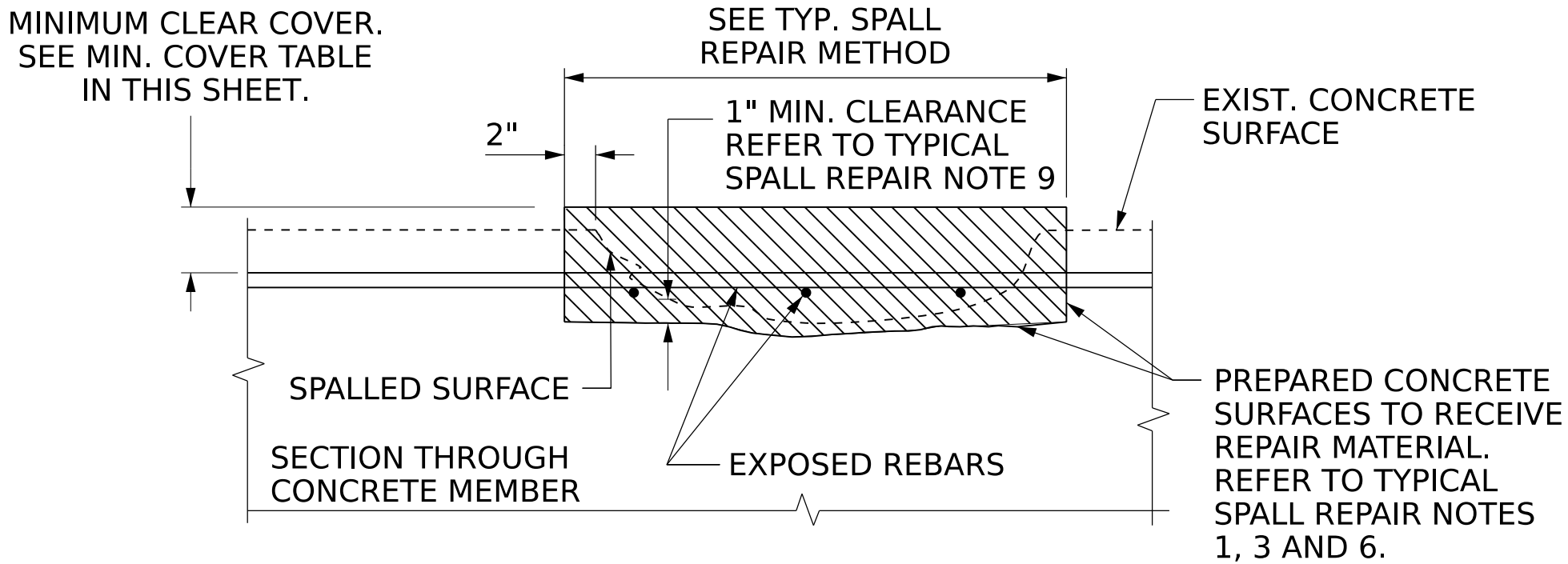
TYPICAL
DELAMINATIONS AND SPALLS

TYPICAL
SPALL WITH EXPOSED REBAR



SIMPLE PATCH CONFIGURATION

AT CORNER LOCATIONS PROVIDE RIGHT ANGLE CUTS. PATCH CONFIGURATION SHALL BE KEPT AS SIMPLE AS POSSIBLE. INDIVIDUAL REPAIR AREAS WITHIN 2 FEET SHALL BE JOINED AT THE DIRECTION OF THE ENGINEER.



EXPOSING AND UNDERCUTTING REINFORCING STEEL

APPLICABLE TO HORIZONTAL, VERTICAL, AND OVERHEAD LOCATIONS

MIN. CONCRETE COVER TABLE

STRUCTURE ELEMENT	COVER	
	ALL OTHER SITES	CORROSIVE SITES
BRIDGE DECK TO TOP OF SLAB TO BOTTOM OF SLAB	2 ¹ / ₂ " (65mm) 1 ¹ / ₄ " (32mm)	2 ¹ / ₂ " (65mm) 2 ¹ / ₂ " (65mm) *
FOOTINS AND PILE CAPS TO TOP FACE TO ALL OTHER FACES	2" (50mm) 3" (75mm)	4" (100mm) 4" (100mm)
BENT CAPS TO BOTTOM OF CAP TO ENDS OF CAP TO TOP OF CAP TO SIDES OF CAP	3" (75mm) 2" (50mm) 2" (50mm) 2" (50mm)	4" (100mm) * 3" (75mm) * 3" (75mm) 3" (75mm) *
COLUMNS (SPIRAL)	2" (50mm)	3" (75mm)
DRILLED PIERS (SPIRAL)	5" (125mm)	6" (150mm)
CULVERTS TO BOTTOM OF BOTTOM SLABS AND FOOTINGS TO ALL OTHER FACES	3" (75mm)	3" (75mm)
	2" (50mm)	2" (50mm)
APPROACH SLABS	2" (50mm)	2" (50mm)

TYPICAL SPALL REPAIR

- FOR CONCRETE RESTORATION, REMOVE AND REPAIR UNSOUND CONCRETE FROM AREAS TO BE REPAIRED IN ACCORDANCE WITH THIS SHEET AND THE PROJECT SPECIAL PROVISIONS. AREAS WELL ADHERED TO EXISTING STRAND OR REINFORCEMENT SHALL REMAIN.
- ALL UNSOUND CONCRETE MUST BE REMOVED. HOWEVER, PRESTRESSED STRANDS SHOULD NOT BE DISTURBED UNLESS ABSOLUTELY NECESSARY. USE EXTREME CARE TO NOT DAMAGE STRANDS.
- ALL REPAIRS SHALL BE MARKED FOR APPROVAL OF APPROXIMATE PERIMETER PRIOR TO INITIATION OF WORK.
- THE CONTRACTOR SHALL SUBMIT A PLAN FOR CONTROL AND DISPOSAL OF DEBRIS TO THE ENGINEER FOR APPROVAL.
- ANY REINFORCEMENT WHICH IS LOOSE SHALL BE SECURED IN PLACE BY TYING TO OTHER SECURED BARS OR BY OTHER APPROVED METHODS. LAP SPLICES SHALL BE INSTALLED IN ACCORDANCE WITH THE TABLE BELOW.
- CLEAN EXPOSED REBARS AND ANY LOOSE CONCRETE OR ABRASIVES BY SANDBLASTING OR APPROVED ALTERNATE. CLEANED STEEL SHALL NOT BE LEFT EXPOSED FOR MORE THAN 72 HOURS PRIOR TO ENCAPSULATION OF CONCRETE.
- AN APPROVED BONDING AGENT SHALL BE USED ON ALL EXPOSED CONCRETE SURFACES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS BEFORE THE REPAIR MATERIAL IS APPLIED.
- FILL VOIDS WITH REPAIR MATERIAL IN ACCORDANCE WITH THE PROJECT SPECIAL PROVISIONS AND NCDOT SPECIFICATIONS. NOTE THAT ANY REPAIR MATERIAL APPLIED TO OVERHEAD LOCATIONS SHALL BE SPECIFICALLY DESIGNATED FOR OVERHEAD USE BY THE MANUFACTURER'S SPECIFICATIONS.
- FOR OVERHEAD SPALL REPAIRS, EXCAVATE CONCRETE TO A MINIMUM DEPTH OF 2 INCHES BEHIND FIRST MAT OF REINFORCING STEEL.

TYPICAL CRACK REPAIR

- OBTAIN ENGINEER'S APPROVAL TO CARRY OUT CRACK REPAIR (IN LIEU OF SPALL REPAIR) FOR CASES WHERE ADJACENT CONCRETE IS OTHERWISE SOUND AND CRACKING IS NOT A RESULT OF CORRODING REINFORCEMENT.
- ADDRESS CRACKS IN NEW CONSTRUCTION IN ACCORDANCE WITH PROJECT SPECIAL PROVISIONS. ADDRESS EXISTING CRACKS IN ACCORDANCE WITH THIS SHEET AND PROJECT SPECIAL PROVISIONS.
- REMOVE UNSOUND CONCRETE FROM CRACK AREA.
- THE CONTRACTOR SHALL SUBMIT A PLAN FOR CONTROL AND DISPOSAL OF DEBRIS TO THE ENGINEER FOR APPROVAL.
- ENGINEER TO APPROVE CRACK AND CAP SEAL MATERIAL PRIOR TO BEGINNING OF CONSTRUCTION.
- APPLY CLASS II SURFACE FINISH AT COMPLETION OF CRACK REPAIR TO REMOVE FINS OR KNOBS IN ACCORDANCE WITH SUBARTICLE 420-17(F) OF THE NCDOT STANDARD SPECIFICATIONS.

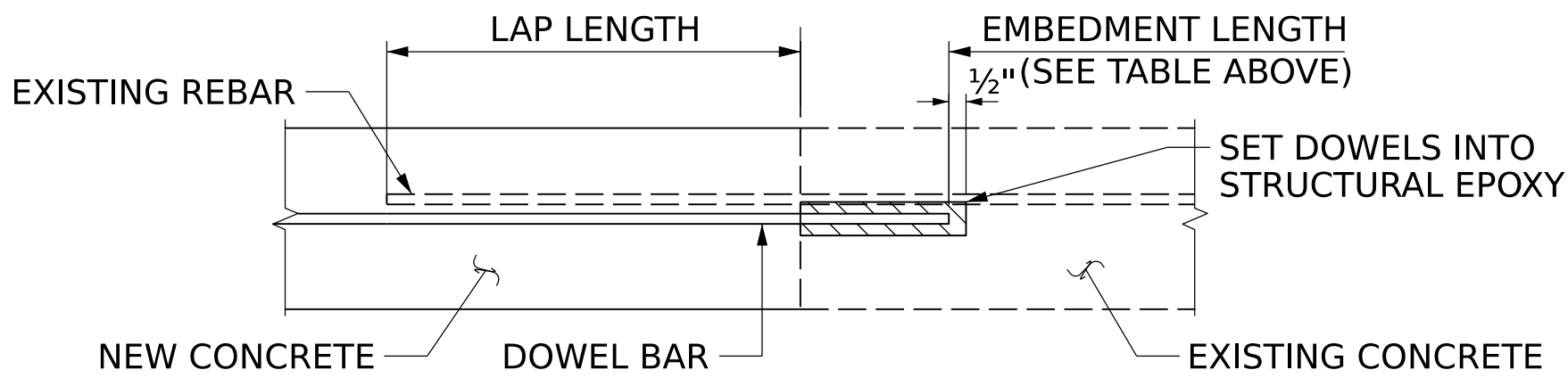
DOWEL DETAILS & NOTES

DOWEL DIMENSIONS (UNLESS OTHERWISE NOTED)			
DOWEL SIZE	HOLE DIAMETER	EMBEDMENT LENGTH	MIN LAP LENGTH
4	5/8"	8"	1'-9"
5	3/4"	9"	2'-2"
6	7/8"	11"	2'-7"
8	1 1/8"	1'-4"	4'-6"

NOTES: ANY REQUIRED DOWEL HOLES SHALL BE DRILLED INTO EXISTING CONCRETE ACCORDING TO THE DETAIL AND NCDOT SPECIFICATIONS, SUBARTICLE 420-13.

NOTIFY THE ENGINEER OF ANY BROKEN BARS OR BARS WHICH ARE DETERMINED TO HAVE A SECTION LOSS OF 10% OR GREATER.

INSTALL DOWELS IN ACCORDANCE WITH NCDOT SPECIFICATIONS, SUBARTICLE 420-13.



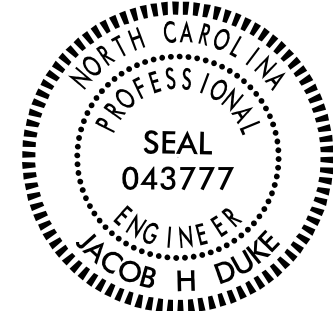
CONCRETE REPAIR NOTES

- PERFORM A SOUNDING SURVEY IN THE PRESENCE OF THE ENGINEER TO IDENTIFY ALL LOCATIONS IN NEED OF CONCRETE REPAIR.
- GAIN CONCURRENCE ON ALL REPAIR AREAS AT EACH LOCATION PRIOR TO COMMENCING WORK.
- THE DETERIORATED AREAS SHOWN ON OTHER SHEETS ARE BASED ON THE BRIDGE INSPECTION REPORT, AND PARTIAL FIELD REVIEWS OF THE STRUCTURE. AS SUCH, THEY ARE FOR INFORMATIONAL PURPOSES, SUBJECT TO CHANGE BASED ON CONTINUING DETERIORATION.
- EXTEND REPAIR AREAS A MINIMUM OF 2" INTO SOUND CONCRETE BEYOND EDGE OF SPALLS AND SQUARE OFF AREAS IN ACCORDANCE WITH DETAILS ON THIS SHEET.
- THE METHOD USED TO DELINEATE THE AREAS OF UNSOUND CONCRETE TO BE REPAIRED SHALL NOT PERMANENTLY MARK THE CONCRETE, LEAVE ANY RESIDUE AFTER REMOVAL, OR REQUIRE HARSH CHEMICALS TO REMOVE.
- THE CONTRACTOR SHALL REMOVE THE DETERIORATED CONCRETE IN ACCORDANCE WITH THE GUIDELINES SET IN THESE NOTES, IN THE PROJECT SPECIAL PROVISIONS, AND THE STANDARD SPECIFICATIONS.
- REMOVE ALL UNSOUND CONCRETE AND SOUND CONCRETE TO THE EXTENT NECESSARY. MINIMUM OF 1" BEHIND REBAR AND MINIMUM OF 2" CLEARANCE TO SAWCUT.
- REINFORCING STEEL, WHICH IS DETERMINED BY THE ENGINEER TO BE REPLACED, SHALL BE REMOVED TO A POINT WHERE IT IS SOUND. THE PATCH SHALL EXTEND A SUFFICIENT DISTANCE BEYOND THIS POINT TO DEVELOP A SPlice LENGTH SPECIFIED IN THE TABLE ON THIS SHEET.
- FOR REPAIRS OVER TRAFFIC AND SHALLOW REPAIRS THAT DO NOT ENGAGE REINFORCEMENT, ANCHOR PATCH MATERIAL USING 1/4" GALVANIZED BOLTS, EPOXY ANCHORED WITH 2" EMBEDMENT. PLACE BOLTS IN A 6" GRID. USE A LATEX OR EPOXY PATCH MATERIAL FOR IMPROVED BOND. MASONRY ANCHORS ARE ACCEPTABLE ALSO, SUBMIT PLAN IF USING MASONRY ANCHORS.
- CONCRETE COVER SHOWN IN THE PLANS DOES NOT INCLUDE PLACEMENT OR FABRICATION TOLERANCES UNLESS SHOWN AS "MINIMUM COVER". SEE NCDOT SPECIFICATIONS FOR ALLOWABLE REINFORCEMENT PLACEMENT TOLERANCES.
- WHEN PROPOSED CONCRETE REPAIRS (OR DETERMINED LOCATIONS) ARE ADJACENT TO A CORNER, REPAIR ON THE ADJACENT EDGE SHOULD BE ANTICIPATED IN ADDITION TO THE AREA SHOWN ON SUBSTRUCTURE CONCRETE REPAIR SHEETS. THE CONTRACTOR IS RESPONSIBLE FOR THIS REPAIR AT ALL LOCATIONS REGARDLESS OF CALL-OUT(S) ON RESPECTIVE SHEET(S).
- FINISH CONCRETE SURFACES IN ACCORDANCE WITH THE LATEST NCDOT SPECIFICATIONS. MATCH EXISTING FINISH ON ALL EXPOSED EDGES UNLESS OTHERWISE NOTED. A CLASS 5 FINISH COATING SHALL BE APPLIED TO THE BEAM ENDS WHERE CONCRETE REPAIRS HAVE BEEN PERFORMED, MATCHING THE COLOR OF SURROUNDING CONCRETE.
- ALL REINFORCING STEEL SHALL BE ASTM A615, GRADE 60. REINFORCEMENT DETAIL DIMENSIONS ARE OUT-TO-OUT OF BARS. ALL DIMENSIONS PERTAINING TO LOCATION OF REINFORCEMENT ARE TO CENTERLINE OF BARS EXCEPT WHERE THE CLEAR DIMENSION IS SHOWN TO FACE OF CONCRETE. ANY DAMAGE TO EXISTING REINFORCING STEEL, DURING CONTRACTOR'S OPERATIONS, SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AND PERFORMED AT NO ADDITIONAL COST TO THE DEPARTMENT.
- FOR ADHESIVELY ANCHORED DOWELS OR ANCHOR BOLTS, SEE STANDARD SPECIFICATIONS, SUBARTICLE 420-13.
- FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.
- FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.
- FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.
- FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

DRAWN BY : ALLEN J. MCSWAIN DATE : 10/2024
CHECKED BY : FIDEL L. FLORES DATE : 10/2024
DESIGN ENGINEER: JACOB H. DUKE DATE : 10/2024

10/8/2025
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Signed by:
Jacob Duke
29530C954E94D9
10/8/2025



PROJECT NO. 15BPR.149.3
WILKES COUNTY
BRIDGE NO. 960068

SHEET 1 OF 2

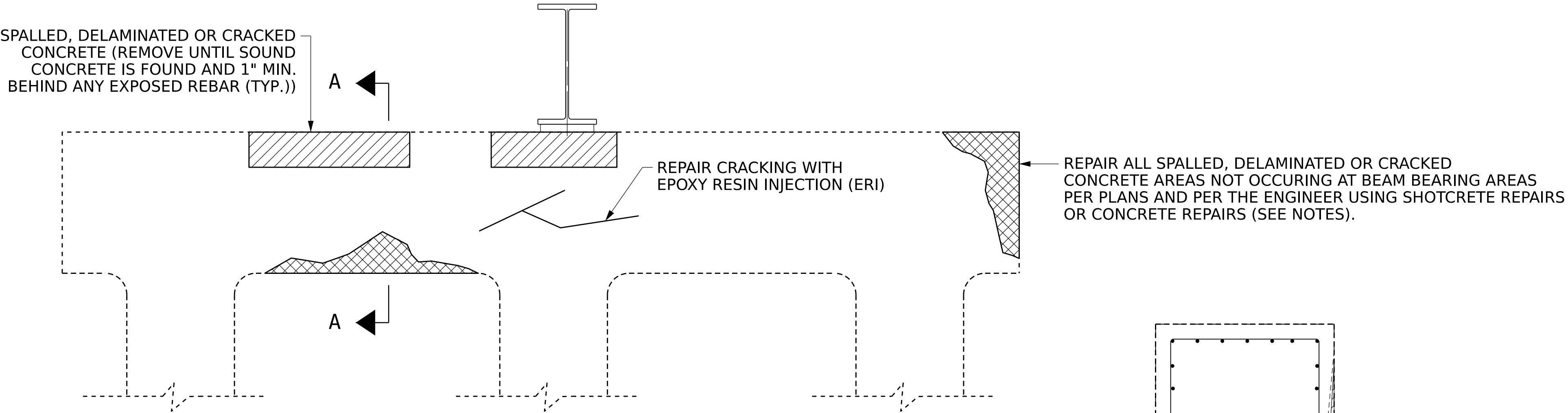
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE RESTORATION DETAILS

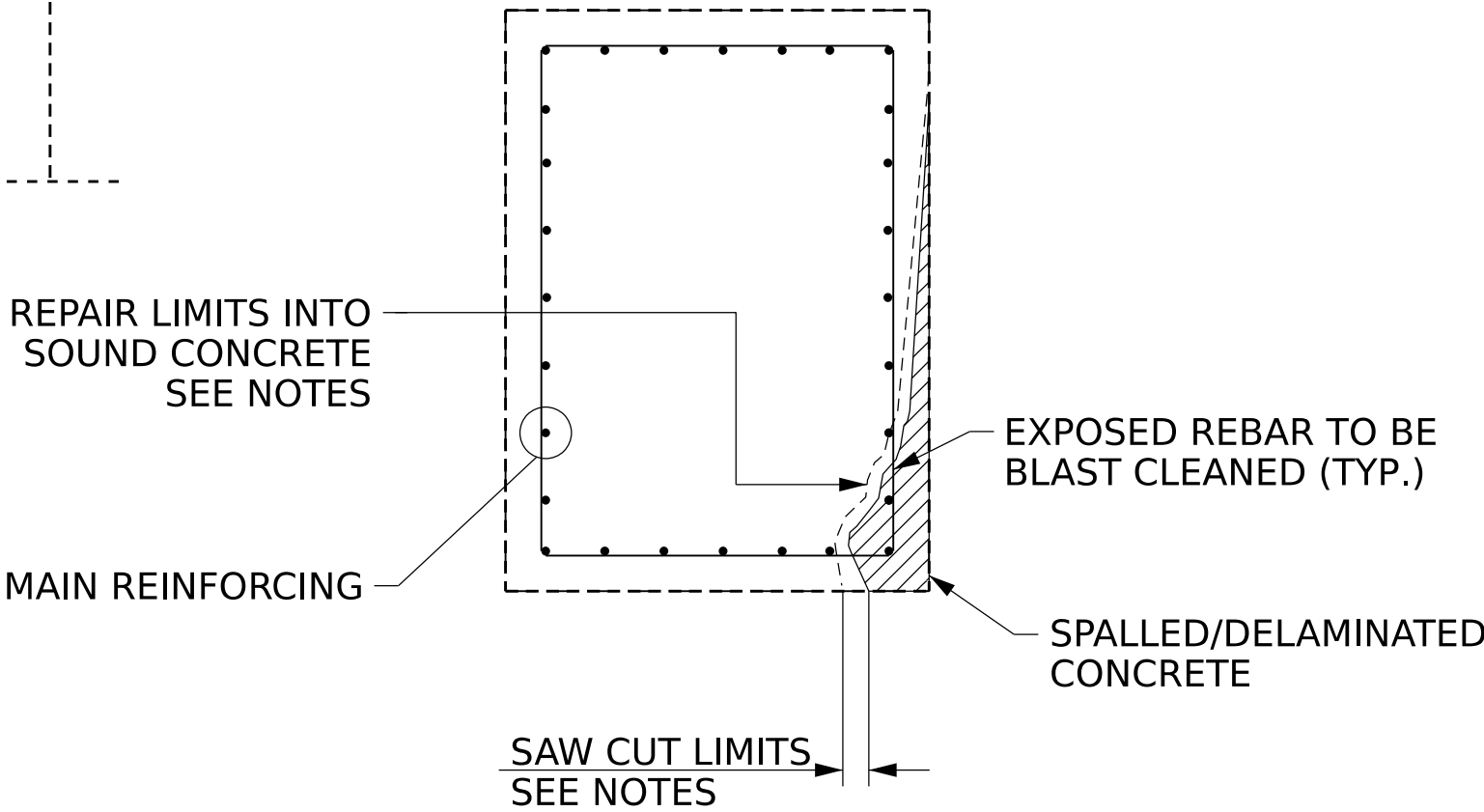
REVISIONS						SHEET NO. S-21
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 22
2			4			

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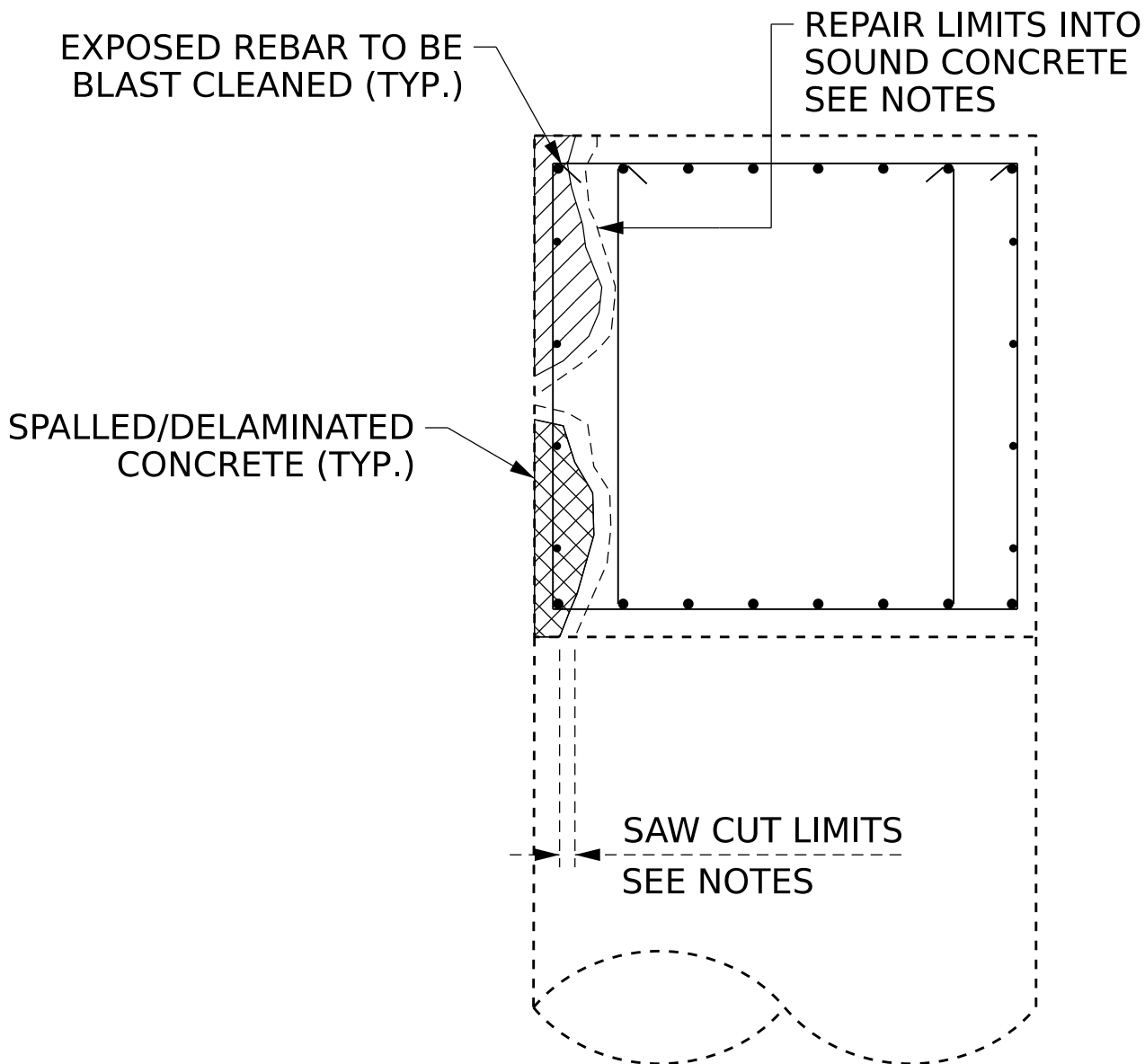
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RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506



BENT CAP REPAIRS

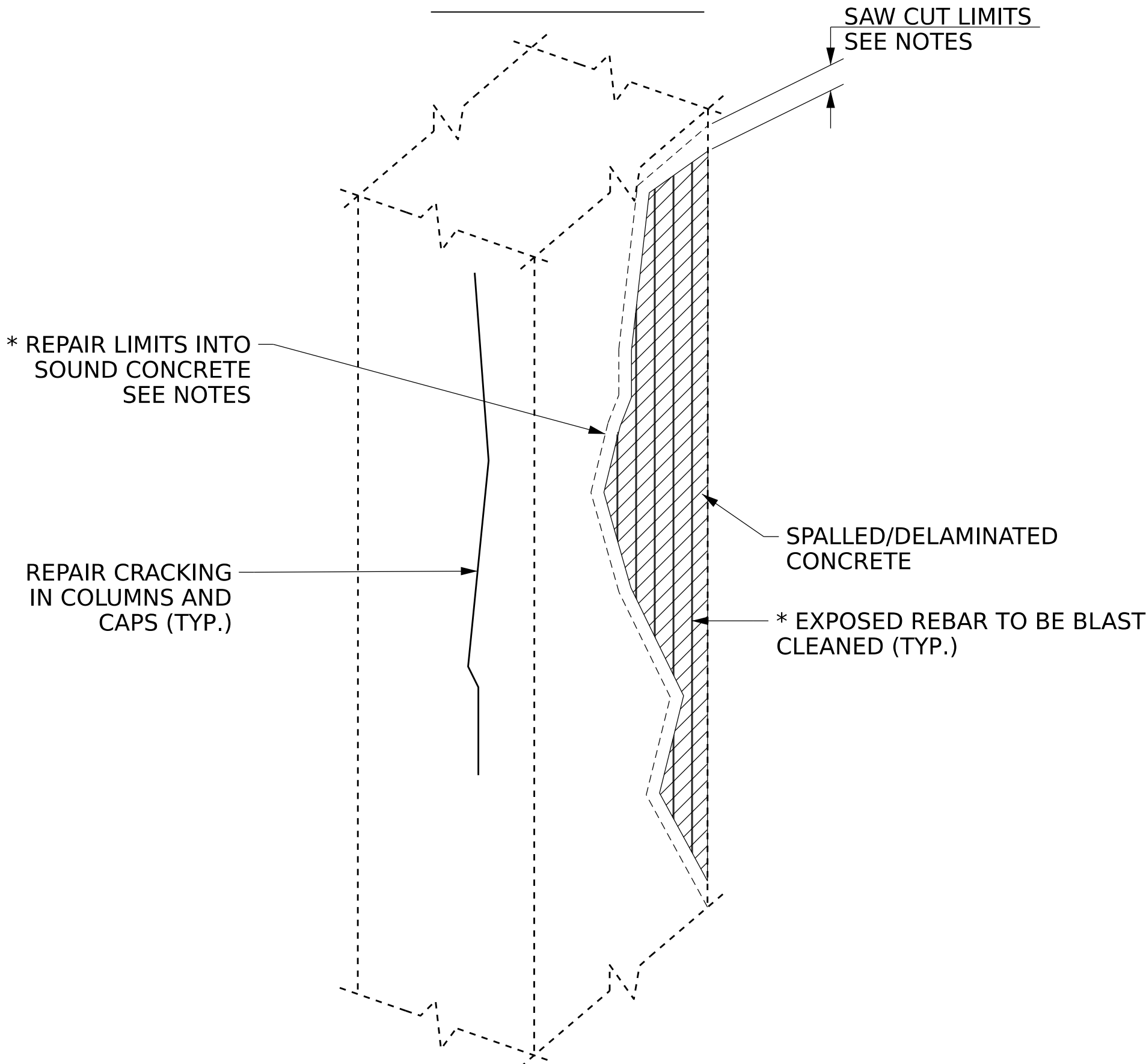


PLAN OF COLUMN



SECTION A-A

CAP REPAIRS



ELEVATION OF COLUMN

* REPAIR LENGTH SHALL NOT EXCEED 10 VERTICAL FEET AT ONCE OR 1/2 COLUMN DIAMETERS

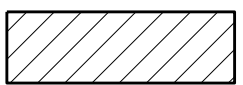
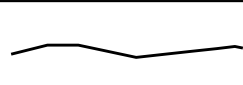
COLUMN REPAIRS

RECTANGULAR COLUMNS SHOWN, ROUND COLUMNS SIMILAR

NOTES:

- WORK THIS SHEET WITH REPAIR METHODS AND CONCRETE REPAIR NOTES IN "CONCRETE RESTORATION DETAILS" SHEET 1 AND THE "BRIDGE JACKING DETAILS" SHEET.
- TYPICAL BENT CAP REPAIRS ARE SHOWN IN THIS SHEET. REPAIR DETAILS SIMILAR FOR END BENT CAPS.
- THE METHOD USED TO DELINEATE THE AREAS OF UNSOUND CONCRETE TO BE REPAIRED SHALL NOT PERMANENTLY MARK THE CONCRETE, LEAVE ANY RESIDUE AFTER REMOVAL, OR REQUIRE HARSH CHEMICALS TO REMOVE.
- THE CONTRACTOR SHALL REMOVE THE DETERIORATED CONCRETE IN ACCORDANCE WITH THE GUIDELINES SET IN THESE NOTES, THE SPECIAL PROVISIONS, AND THE STANDARD SPECIFICATIONS.
- REMOVE UNSOUND CONCRETE AND SOUND CONCRETE TO THE EXTENT NECESSARY, A MINIMUM OF 1" BEHIND REBAR AND MINIMUM CLEARANCE OF 2" BEYOND SAWCUT.
- REINFORCING STEEL WHICH IS DETERMINED BY THE ENGINEER TO BE REPLACED, SHALL BE REMOVED TO A POINT WHERE IT IS SOUND. THE PATCH SHALL EXTEND A SUFFICIENT DISTANCE BEYOND THIS POINT TO DEVELOP A SPLICE LENGTH SPECIFIED IN THE TABLE IN "CONCRETE RESTORATION DETAILS" SHEET 1.
- IF ANY AREA IS DETERMINED TO BE UNSTABLE DURING THE REPAIR PROCESS AS DETERMINED BY THE ENGINEER, STOP THE CURRENT REPAIR PROCEDURE, SHORE THE AREA AND PERFORM A "FORM AND POUR" CONCRETE REPAIR.
- NO MORE THAN 30% OF THE CAP OR COLUMN/PILE CROSS SECTIONAL AREA SHALL BE REMOVED AT ONE TIME. SHOULD IT BECOME NECESSARY TO REMOVE MORE THAN 30% OF THE CROSS SECTIONAL AREA, NOTIFY THE ENGINEER PRIOR TO PROCEEDING.
- SIMULTANEOUS REMOVAL OF UNSOUND CONCRETE MAY BE PERMITTED ON MORE THAN ONE FACE OF A CAP AND/OR COLUMN/PILE, BUT NO MORE THAN $\frac{1}{3}$ OF THE CIRCUMFERENCE SHALL BE REMOVED AT A TIME. IF REMOVAL EXTENDS MORE THAN 1- $\frac{1}{2}$ " BEHIND THE MAIN REINFORCING BARS. NOTIFY THE ENGINEER PRIOR TO PROCEEDING.
- REPAIR TYPES SHOWN IN THIS SHEET ARE FOR ILLUSTRATION PURPOSES ONLY. FOR REPAIRS AT SPECIFIC LOCATIONS, SEE "SUBSTRUCTURE REPAIRS" SHEETS.
- REPAIRS TO THE BENT CAPS MAY REQUIRE BRIDGE JACKING. FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

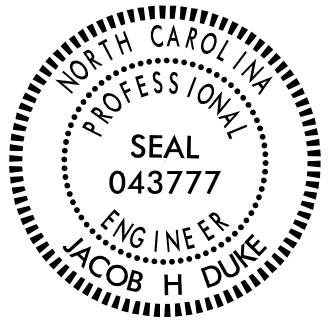
LEGEND

	CONCRETE REPAIR AREA (CR)
	SHOTCRETE REPAIR AREA (SCR)
	EPOXY RESIN INJECTION (ERI)

PROJECT NO. 15BPR.149.3
WILKES COUNTY
BRIDGE NO. 960068

SHEET 2 OF 2

Signed by:
Jacob Duke
29530C9054E94D9
10/8/2025



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE
RESTORATION
DETAILS

DRAWN BY : ALLEN J. MCSWAIN DATE : 10/2024
CHECKED BY : FIDEL L. FLORES DATE : 10/2024
DESIGN ENGINEER: JACOB H. DUKE DATE : 10/2024

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fflores

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UNLESS ALL SIGNATURES COMPLETED

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NC FIRM LICENSE: C-1506

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			22

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	AASHTO (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE AASHTO
STRESS IN EXTREME FIBER OF STRUCTURAL STEEL - AASHTO M270 GRADE 36	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION - GRADE 60	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	SEE AASHTO
STRUCTURAL TIMBER - TREATED OR UNTREATED EXTREME FIBER STRESS	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2024 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ³/₄" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1¹/₂" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¹/₄" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A ¹/₄" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE ⁷/₈" Ø SHEAR STUDS FOR THE ³/₄" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⁷/₈" Ø STUDS FOR 4 - ³/₄" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⁷/₈" Ø STUDS ALONG THE BEAM AS SHOWN FOR ³/₄" Ø STUDS BASED ON THE RATIO OF 3 - ⁷/₈"Ø STUDS FOR 4 - ³/₄" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST ⁵/₁₆" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY ¹/₁₆" OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.